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(54) Title: CLONING OF CYTOCHROME P450 GENES FROM NICOTIANA

(57) Abstract: The present invention relates to p450 enzymes and nucleic acid sequences encoding p450 enzymes in Nicotiana, and methods of using those enzymes and nucleic acid sequences to alter plant phenotypes.

CLONING OF CYTOCHROME P450 GENES FROM NICOTIANA

The present invention relates to nucleic acid sequences
encoding cytochrome p450 enzymes (hereinafter referred to as
p450 and p450 enzymes) in *Nicotiana* plants and methods for
using those nucleic acid sequences to alter plant phenotypes.

BACKGROUND

Cytochrome p450s catalyze enzymatic reactions for a
diverse range of chemically dissimilar substrates that include
the oxidative, peroxidative and reductive metabolism of
endogenous and xenobiotic substrates. In plants, p450s
participate in biochemical pathways that include the synthesis
of plant products such as phenylpropanoids, alkaloids,
terpenoids, lipids, cyanogenic glycosides, and glucosinolates
(Chappel, Annu. Rev. Plant Physiol. Plant Mol. Biol. 198,
49:311-343). Cytochrome p450s, also known as p450 heme-
thiolate proteins, usually act as terminal oxidases in multi-
component electron transfer chains, called p450- containing
monooxygenase systems. Specific reactions catalyzed include
demethylation, hydroxylation, epoxidation, N-oxidation,
sulfooxidation, N-, S-, and O- dealkylations, desulfation,
deamination, and reduction of azo, nitro, and N-oxide groups.

The diverse role of *Nicotiana* plant p450 enzymes has been
implicated in effecting a variety of plant metabolites such as
phenylpropanoids, alkaloids, terpenoids, lipids, cyanogenic
glycosides, glucosinolates and a host of other chemical

entities. During recent years, it is becoming apparent that
some p450 enzymes can impact the composition of plant
metabolites in plants. For example, it has been long desired
to improve the flavor and aroma of certain plants by altering
its profile of selected fatty acids through breeding; however
very little is known about mechanisms involved in controlling
the levels of these leaf constituents. The down regulation of
p450 enzymes associated with the modification of fatty acids
may facilitate accumulation of desired fatty acids that
provide more preferred *leaf* phenotypic qualities. The
function of p450 enzymes and their broadening roles in plant
constituents is still being discovered. For instance, a
special class of p450 enzymes was found to catalyze the
breakdown of fatty acid into volatile C6- and C9-aldehydes and
-alcohols that are major contributors of "fresh green" odor of
fruits and vegetables. The level of other novel targeted p450s
may be altered to enhance the qualities of leaf constituents
by modifying lipid composition and related break down
metabolites in Nicotiana leaf. Several of these constituents
in leaf are affected by senescence that stimulates the
maturation of leaf quality properties. Still other reports
have shown that p450s enzymes are play a functional role in
altering fatty acids that are involved in plant-pathogen
interactions and disease resistance.

In other instances, p450 enzymes have been suggested to
be involved in alkaloid biosynthesis. Nornicotine is a minor
alkaloid found in *Nicotiana tabaceum*. It has been postulated
that it is produced by the p450 mediated demethylation of

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nicotine followed by acylation and nitrosation at the N
position thereby producing a series of N-acylnonicotines and
N-nitrosonornicotines.   N-demethylation, catalyzed by a
putative p450 demethylase, is thought to be a primary source

5   of nornicotine biosyntheses in *Nicotiana*. While the enzyme is
believed to be microsomal, thus far a nicotine demethylase
enzyme has not been successfully purified, nor have the genes
involved been isolated.

10   Furthermore, it is hypothesized but not proven that the
activity of p450 enzymes is genetically controlled and also
strongly influenced by environment factors. For example, the
demethylation of nicotine in *Nicotiana* is thought to increase
substantially when the plants reach a mature stage.

15   Furthermore, it is hypothesized yet not proven that the
demethylase gene contains a transposable element that can
inhibit translation of RNA when present.

The large multiplicity of p450 enzyme forms, their

20   differing structure and function have made their research on
Nicotiana p450 enzymes very difficult before the enclosed
invention.   In addition, cloning of p450 enzymes has been
hampered at least in part because these membrane-localized
proteins are typically present in low abundance and often

25   unstable to purification.   Hence, a need exists for the
identification of p450 enzymes in plants and the nucleic acid
sequences associated with those p450 enzymes. In particular,
only a few cytochrome p450 proteins have been reported in
Nicotiana.   The inventions described herein entail the

discovery of a substantial number of cytochrome p450 fragments
that correspond to several groups of p450 species based on
their sequence identity.

SUMMARY

The present invention is directed to plant p450 enzymes.
The present invention is further directed to plant p450
enzymes from *Nicotiana*. The present invention is also
directed to p450 enzymes in plants whose expression is induced
by ethylene and/or plant senescence. The present invention is
yet further directed to nucleic acid sequences in plants
having enzymatic activities, for example, being categorized as
oxygenase, demethylase and the like, or other and the use of
those sequences to reduce or silence the expression or over-
expression of these enzymes. The invention also relates to
p450 enzymes found in plants containing higher nornicotine
levels than plants exhibiting lower nornicotine levels.

In one aspect, the invention is directed to nucleic acid
sequences as set forth in SEQ. ID. Nos. 1, 3, 5, 7, 9, 11, 13,
15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43,
45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73,
75, 77, 79, 81, 83, 85, 87, 89, 91, 95, 97, 99, 101, 103, 105,
107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129,
131, 133, 135, 137, 139, 143, 145, 147, 149, 151, 153, 155,
157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179,
181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203,
205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227,
229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251,

253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275,
277, 279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299,
301, 303, 305, 307, 309, 311, 313 and 315.

In a second related aspect, those fragments containing greater than 75% identity in nucleic acid sequence were placed into groups dependent upon their identity in a region corresponding to the first nucleic acid following the cytochrome p450 motif GXRXCX(G/A) to the stop codon. The representative nucleic acid groups and respective species are shown in Table I.

In a third aspect, the invention is directed to amino acid sequences as set forth in SEQ. ID. Nos. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 144, 146, 148, 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314 and 316.

In a fourth related aspect, those fragments containing greater than 71% identity in amino acid sequence were placed into groups dependent upon their identity to each other in a

region corresponding to the first amino acid following the
cytochrome p450 motif GXRXCX(G/A) to the stop codon.   The
representative amino acid groups and respective species are
shown in Table II.

In a fifth aspect, the invention is directed to amino
acid sequences of full length genes as set forth in SEQ. ID.
Nos. 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170,
172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194,
196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218,
220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242,
244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266,
268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290,
292, 294, 296, 298, 300, 302, 304, 306, 308, 310, 312, 314 and
316.

In a sixth related aspect, those full length genes
containing 85% or greater identity in amino acid sequence were
placed into groups dependent upon the identity to each other.
The representative amino acid groups and respective species
are shown in Table III.

In a seventh aspect, the invention is directed to amino
acid sequences of the fragments set forth in SEQ. ID. Nos.
299-357.

In the eighth related aspect, those fragments containing
90% or greater identity in amino acid sequence were placed
into groups dependent upon their identity to each other in a
region corresponding to the first cytochrome p450 domain,

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UXXRXXZ, to the third cytochrome domain, GXRXO, where U is E or K, X is any amino acid and Z is R, T, S or M. The representative amino acid groups respective species shown in Table IV.

In a ninth related aspect, the reduction or elimination or over-expression of p450 enzymes in Nicotiana plants may be accomplished transiently using RNA viral systems.

Resulting transformed or infected plants are assessed for phenotypic changes including, but not limited to, analysis of endogenous p450 RNA transcripts, p450 expressed peptides, and concentrations of plant metabolites using techniques commonly available to one having ordinary skill in the art.

In a tenth important aspect, the present invention is also directed to generation of trangenic Nicotiana lines that have altered p450 enzyme activity levels. In accordance with the invention, these transgenic lines include nucleic acid sequences that are effective for reducing or silencing or increasing the expression of certain enzyme thus resulting in phenotypic effects within Nicotiana.   Such nucleic acid sequences include SEQ. ID. Nos. 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205,

207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229,
231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253,
255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277,
279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301,
303, 305, 307, 309, 311, 313 and 315.

In a very important eleventh aspect of the invention,
plant cultivars including nucleic acids of the present
invention in a down regulation capacity using either full
length genes or fragments thereof or in an over-expression
capacity using full length genes will have altered metabolite
profiles relative to control plants.

In a twelfth aspect of the invention, plant cultivars
including nucleic acid of the present invention using either
full length genes or fragments thereof in modifying the
biosynthesis or breakdown of metabolites derived from the
plant or external to the plants, will have use in tolerating
certain exogenous chemicals or plant pests. Such nucleic acid
sequences include SEQ ID. Nos. 1, 3, 5, 7, 9, 11, 13, 15, 17,
19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47,
49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77,
79, 81, 83, 85, 87, 89, 91, 95, 97, 99, 101, 103, 105, 107,
109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131,
133, 135, 137, 139, 143, 145, 147, 149, 151, 153, 155, 157,
159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181,
183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205,
207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229,
231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253,
255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277,

279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313 and 315.

In a thirteenth aspect, the present invention is directed to the screening of plants, more preferably Nicotiana, that contain genes that have substantial nucleic acid identity to the taught nucleic acid sequence. The use of the invention would be advantageous to identify and select plants that contain a nucleic acid sequence with exact or substantial identity where such plants are part of a breeding program for traditional or transgenic varieties, a mutagenesis program, or naturally occurring diverse plant populations. The screening of plants for substantial nucleic acid identity may be accomplished by evaluating plant nucleic acid materials using a nucleic acid probe in conjunction with nucleic acid detection protocols including, but not limited to, nucleic acid hybridization and PCR analysis. The nucleic acid probe may consist of the taught nucleic acid sequence or fragment thereof corresponding to SEQ ID 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 143, 145, 147, 149, 151, 153, 155, 157, 159, 161, 163, 165, 167, 169, 171, 173, 175, 177, 179, 181, 183, 185, 187, 189, 191, 193, 195, 197, 199, 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 223, 225, 227, 229, 231, 233, 235, 237, 239, 241, 243, 245, 247, 249, 251, 253, 255, 257, 259, 261, 263, 265, 267, 269, 271, 273, 275, 277,

279, 281, 283, 285, 287, 289, 291, 293, 295, 297, 299, 301, 303, 305, 307, 309, 311, 313 and 315.

In a fourteenth aspect, the present invention is directed to the identification of plant genes, more preferably Nicotiana, that share substantial amino acid identity corresponding to the taught nucleic acid sequence. The identification of plant genes including both cDNA and genomic clones, those cDNAs and genomic clones, more preferably from Nicotiana may be accomplished by screening plant cDNA libraries using a nucleic acid probe in conjunction with nucleic acid detection protocols including, but not limited to, nucleic acid hybridization and PCR analysis. The nucleic acid probe may be comprised of nucleic acid sequence or fragment thereof corresponding to SEQ ID 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 95, 97, 99, 101, 103, 105, 107, 109, 111, 113, 115, 117, 119, 121, 123, 125, 127, 129, 131, 133, 135, 137, 139, 143, 145 and 147.

In an alterative fifteenth aspect, cDNA expression libraries that express peptides may be screened using antibodies directed to part or all of the taught amino acid sequence. Such amino acid sequences include SEQ ID 2, 4, 8, 9, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 96, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116, 118, 120, 122, 124, 126, 128, 130, 132, 134, 136, 138, 140, 144, 146, 148.

In a sixteenth important aspect, the present invention is also directed to generation of transgenic Nicotiana lines that have over-expression of p450 enzyme activity levels. In accordance with the invention, these transgenic lines include all nucleic acid sequences encoding the amino acid sequences of full length genes that are effective for increasing the expression of certain enzyme thus resulting in phenotypic effects within Nicotiana. Such amino acid sequences include SEQ. ID. 150, 152, 154, 156, 158, 160, 162, 164, 166, 168, 170, 172, 174, 176, 178, 180, 182, 184, 186, 188, 190, 192, 194, 196, 198, 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 222, 224, 226, 228, 230, 232, 234, 236, 238, 240, 242, 244, 246, 248, 250, 252, 254, 256, 258, 260, 262, 264, 266, 268, 270, 272, 274, 276, 278, 280, 282, 284, 286, 288, 290, 292, 294, 296, 298. 300, 302, 304, 306, 308, 310, 312, 314 and 316.

A tobacco product is also provided that includes tobacco leaf (lamina and/or stem) having reduced amounts of nornicotine. The tobacco product includes tobacco (tobacco leaf including lamina and/or stem) from a plant that includes the sequences described herein or where genes encoding tobacco specific nitrosamines have been eliminated or suppressed. The elimination or suppression of genes encoding tobacco speicific nitrosamines is effective for reducing tobacco specific nitrosamines in the tobacco products from about 5 to about 10%, in another aspect from about 10 to 20%, in another aspect about 20 to 30%, and in another aspect greate than 30%, as compared to tobacco products made from tobacco plants where gnees coding for tobacco specific nitrosamines have not been eliminated or suppressed. As used herein, the tobacco product may include cigarettes, cigars, pipe tobacco, snuff chewing

tobacco, products blended with the tobacco product, and mixtures thereof.

BRIEF DESCRIPTION OF DRAWINGS

5   Figure 1 shows nucleic acid SEQ. ID. No.:1 and amino acid SEQ. ID. No.:2.

       Figure 2 shows nucleic acid SEQ. ID. No.:3 and amino acid SEQ. ID. No.:4.

       Figure 3 shows nucleic acid SEQ. ID. No.:5 and amino acid
10   SEQ. ID. No.:6.

       Figure 4 shows nucleic acid SEQ. ID. No.:7 and amino acid SEQ. ID. No.:8.

       Figure 5 shows nucleic acid SEQ. ID. No.:9 and amino acid SEQ. ID. No.:10.

15   Figure 6 shows nucleic acid SEQ. ID. No.:11 and amino acid SEQ. ID. No.:12.

       Figure 7 shows nucleic acid SEQ. ID. No.:13 and amino acid SEQ. ID. No.:14.

       Figure 8 shows nucleic acid SEQ. ID. No.:15 and amino
20   acid SEQ. ID. No.:16.

       Figure 9 shows nucleic acid SEQ. ID. No.:17 and amino acid SEQ. ID. No.:18.

       Figure 10 shows nucleic acid SEQ. ID. No.:19 and amino acid SEQ. ID. No.:20.

25   Figure 11 shows nucleic acid SEQ. ID. No.:21 and amino acid SEQ. ID. No.:22.

       Figure 12 shows nucleic acid SEQ. ID. No.:23 and amino acid SEQ. ID. No.:24.

       Figure 13 shows nucleic acid SEQ. ID. No.:25 and amino
30   acid SEQ. ID. No.:26.

Figure 14 shows nucleic acid SEQ. ID. No.:27 and amino acid SEQ. ID. No.:28.

Figure 15 shows nucleic acid SEQ. ID. No.:29 and amino acid SEQ. ID. No.:-30.

Figure 16 shows nucleic acid SEQ. ID. No.:31 and amino acid SEQ. ID. No.:32.

Figure 17 shows nucleic acid SEQ. ID. No.:33 and amino acid SEQ. ID. No.:34.

Figure 18 shows nucleic acid SEQ. ID. No.:35 and amino acid SEQ. ID. No.:36.

Figure 19 shows nucleic acid SEQ. ID. No.:37 and amino acid SEQ. ID. No.:38.

Figure 20 shows nucleic acid SEQ. ID. No.:39 and amino acid SEQ. ID. No.:40.

Figure 21 shows nucleic acid SEQ. ID. No.:41 and amino acid SEQ. ID. No.:42.

Figure 22 shows nucleic acid SEQ. ID. No.:43 and amino acid SEQ. ID. No.:44.

Figure 23 shows nucleic acid SEQ. ID. No.:45 and amino acid SEQ. ID. No.:46.

Figure 24 shows nucleic acid SEQ. ID. No.:47 and amino acid SEQ. ID. No.:48.

Figure 25 shows nucleic acid SEQ. ID. No.:49 and amino acid SEQ. ID. No.:50.

Figure 26 shows nucleic acid SEQ. ID. No.:51 and amino acid SEQ. ID. No.:52.

Figure 27 shows nucleic acid SEQ. ID. No.:53 and amino acid SEQ. ID. No.:54.

Figure 28 shows nucleic acid SEQ. ID. No.:55 and amino acid SEQ. ID. No.:56.

Figure 29 shows nucleic acid SEQ. ID. No.:57 and amino

acid SEQ. ID. No.:58.

Figure 30 shows nucleic acid SEQ. ID. No.:59 and amino acid SEQ. ID. No.:60.

Figure 31 shows nucleic acid SEQ. ID. No.:61 and amino acid SEQ. ID. No.:62.

Figure 32 shows nucleic acid SEQ. ID. No.:63 and amino acid SEQ. ID. No.:64.

Figure 33 shows nucleic acid SEQ. ID. No.:65 and amino acid SEQ. ID. No.:66.

Figure 34 shows nucleic acid SEQ. ID. No.:67 and amino acid SEQ. ID. No.:68.

Figure 35 shows nucleic acid SEQ. ID. No.:69 and amino acid SEQ. ID. No.:70.

Figure 36 shows nucleic acid SEQ. ID. No.:71 and amino acid SEQ. ID. No.:72.

Figure 37 shows nucleic acid SEQ. ID. No.:73 and amino acid SEQ. ID. No.:74.

Figure 38 shows nucleic acid SEQ. ID. No.:75 and amino acid SEQ. ID. No.:76.

Figure 39 shows nucleic acid SEQ. ID. No.:77 and amino acid SEQ. ID. No.:78.

Figure 40 shows nucleic acid SEQ. ID. No.:79 and amino acid SEQ. ID. No.:80.

Figure 41 shows nucleic acid SEQ. ID. No.:81 and amino acid SEQ. ID. No.:82.

Figure 42 shows nucleic acid SEQ. ID. No.:83 and amino acid SEQ. ID. No.:84.

Figure 43 shows nucleic acid SEQ. ID. No.:85 and amino acid SEQ. ID. No.:86.

Figure 44 shows nucleic acid SEQ. ID. No.:87 and amino acid SEQ. ID. No.:88.

Figure 45 shows nucleic acid SEQ. ID. No.:89 and amino acid SEQ. ID. No.:90.

Figure 46 shows nucleic acid SEQ. ID. No.:91 and amino acid SEQ. ID. No.:92.

Figure 48 shows nucleic acid SEQ. ID. No.:95 and amino acid SEQ. ID. No.:96.

Figure 49 shows nucleic acid SEQ. ID. No.:97 and amino acid SEQ. ID. No.:98.

Figure 50 shows nucleic acid SEQ. ID. No.:99 and amino acid SEQ. ID. No.:100.

Figure 51 shows nucleic acid SEQ. ID. No.:101 and amino acid SEQ. ID. No.:102.

Figure 52 shows nucleic acid SEQ. ID. No.:103 and amino acid SEQ. ID. No.:104.

Figure 53 shows nucleic acid SEQ. ID. No.:105 and amino acid SEQ. ID. No.:106.

Figure 54 shows nucleic acid SEQ. ID. No.:107 and amino acid SEQ. ID. No.:108.

Figure 55 shows nucleic acid SEQ. ID. No.:109 and amino acid SEQ. ID. No.:110.

Figure 56 shows nucleic acid SEQ. ID. No.:111 and amino acid SEQ. ID. No.:112.

Figure 57 shows nucleic acid SEQ. ID. No.:113 and amino acid SEQ. ID. No.:114.

Figure 58 shows nucleic acid SEQ. ID. No.:115 and amino acid SEQ. ID. No.:116.

Figure 59 shows nucleic acid SEQ. ID. No.:117 and amino acid SEQ. ID. No.:118.

Figure 60 shows nucleic acid SEQ. ID. No.:119 and amino acid SEQ. ID. No.:120.

Figure 61 shows nucleic acid SEQ. ID. No.:121 and amino

acid SEQ. ID. No.:122.

Figure 62 shows nucleic acid SEQ. ID. No.:123 and amino acid SEQ. ID. No.:124.

Figure 63 shows nucleic acid SEQ. ID. No.:125 and amino acid SEQ. ID. No.:126.

Figure 64 shows nucleic acid SEQ. ID. No.:127 and amino acid SEQ. ID. No.:128.

Figure 65 shows nucleic acid SEQ. ID. No.:129 and amino acid SEQ. ID. No.:130.

Figure 66 shows nucleic acid SEQ. ID. No.:131 and amino acid SEQ. ID. No.:132.

Figure 67 shows nucleic acid SEQ. ID. No.:133 and amino acid SEQ. ID. No.:134.

Figure 68 shows nucleic acid SEQ. ID. No.:135 and amino acid SEQ. ID. No.:136.

Figure 69 shows nucleic acid SEQ. ID. No.:137 and amino acid SEQ. ID. No.:138.

Figure 70 shows nucleic acid SEQ. ID. No.:139 and amino acid SEQ. ID. No.:140.

Figure 72 shows nucleic acid SEQ. ID. No.:143 and amino acid SEQ. ID. No.:144.

Figure 73 shows nucleic acid SEQ. ID. No.:145 and amino acid SEQ. ID. No.:146.

Figure 74 shows nucleic acid SEQ. ID. No.:147 and amino acid SEQ. ID. No.:148.

Figure 75 shows nucleic acid SEQ. ID No.: 149 and amino acid SEQ. ID. No.: 150.

Figure 76 shows nucleic acid SEQ. ID No.: 151 and amino acid SEQ. ID. No.: 152.

Figure 77 shows nucleic acid SEQ. ID No.: 153 and amino acid SEQ. ID. No.: 154.

Figure 78 shows nucleic acid SEQ. ID No.: 155 and amino acid SEQ. ID. No.: 156.

Figure 79 shows nucleic acid SEQ. ID No.: 157 and amino acid SEQ. ID. No.: 158.

Figure 80 shows nucleic acid SEQ. ID No.: 159 and amino acid SEQ. ID. No.: 160.

Figure 81 shows nucleic acid SEQ. ID No.: 161 and amino acid SEQ. ID. No.: 162.

Figure 82 shows nucleic acid SEQ. ID No.: 163 and amino acid SEQ. ID. No.: 164.

Figure 83 shows nucleic acid SEQ. ID No.: 165 and amino acid SEQ. ID. No.: 166.

Figure 84 shows nucleic acid SEQ. ID No.: 167 and amino acid SEQ. ID. No.: 168.

Figure 85 shows nucleic acid SEQ. ID No.: 169 and amino acid SEQ. ID. No.: 170.

Figure 86 shows nucleic acid SEQ. ID No.: 171 and amino acid SEQ. ID. No.: 172.

Figure 87 shows nucleic acid SEQ. ID No.: 173 and amino acid SEQ. ID. No.: 174.

Figure 88 shows nucleic acid SEQ. ID No.: 175 and amino acid SEQ. ID. No.: 176.

Figure 89 shows nucleic acid SEQ. ID No.: 177 and amino acid SEQ. ID. No.: 178.

Figure 90 shows nucleic acid SEQ. ID No.: 179 and amino acid SEQ. ID. No.: 180.

Figure 91 shows nucleic acid SEQ. ID No.: 181 and amino acid SEQ. ID. No.: 182.

Figure 92 shows nucleic acid SEQ. ID No.: 183 and amino acid SEQ. ID. No.: 184.

Figure 93 shows nucleic acid SEQ. ID No.: 185 and amino

acid SEQ. ID. No.: 186.

Figure 94 shows nucleic acid SEQ. ID No.: 187 and amino acid SEQ. ID. No.: 188.

Figure 95 shows nucleic acid SEQ. ID No.: 189 and amino acid SEQ. ID. No.: 190.

Figure 96 shows nucleic acid SEQ. ID No.: 191 and amino acid SEQ. ID. No.: 192.

Figure 97 shows nucleic acid SEQ. ID No.: 193 and amino acid SEQ. ID. No.: 194.

Figure 98 shows nucleic acid SEQ. ID No.: 195 and amino acid SEQ. ID. No.: 196.

Figure 99 shows nucleic acid SEQ. ID No.: 197 and amino acid SEQ. ID. No.: 198.

Figure 100 shows nucleic acid SEQ. ID No.: 199 and amino acid SEQ. ID. No.: 200.

Figure 101 shows nucleic acid SEQ. ID No.: 201 and amino acid SEQ. ID. No.: 202.

Figure 102 shows nucleic acid SEQ. ID No.: 203 and amino acid SEQ. ID. No.: 204.

Figure 103 shows nucleic acid SEQ. ID No.: 205 and amino acid SEQ. ID. No.: 206.

Figure 104 shows nucleic acid SEQ. ID No.: 207 and amino acid SEQ. ID. No.: 208.

Figure 105 shows nucleic acid SEQ. ID No.: 209 and amino acid SEQ. ID. No.: 210.

Figure 106 shows nucleic acid SEQ. ID No.: 211 and amino acid SEQ. ID. No.: 212.

Figure 107 shows nucleic acid SEQ. ID No.: 213 and amino acid SEQ. ID. No.: 214.

Figure 108 shows nucleic acid SEQ. ID No.: 215 and amino acid SEQ. ID. No.: 216.

Figure 109 shows nucleic acid SEQ. ID No.: 217 and amino acid SEQ. ID. No.: 218.

Figure 110 shows nucleic acid SEQ. ID No.: 219 and amino acid SEQ. ID. No.: 220.

Figure 111 shows nucleic acid SEQ. ID No.: 221 and amino acid SEQ. ID. No.: 222.

Figure 112 shows nucleic acid SEQ. ID No.: 223 and amino acid SEQ. ID. No.: 224.

Figure 113 shows nucleic acid SEQ. ID No.: 225 and amino acid SEQ. ID. No.: 226.

Figure 114 shows nucleic acid SEQ. ID No.: 227 and amino acid SEQ. ID. No.: 228.

Figure 115 shows nucleic acid SEQ. ID No.: 229 and amino acid SEQ. ID. No.: 230.

Figure 116 shows nucleic acid SEQ. ID No.: 231 and amino acid SEQ. ID. No.: 232.

Figure 117 shows nucleic acid SEQ. ID No.: 233 and amino acid SEQ. ID. No.: 234.

Figure 118 shows nucleic acid SEQ. ID No.: 235 and amino acid SEQ. ID. No.: 236.

Figure 119 shows nucleic acid SEQ. ID No.: 237 and amino acid SEQ. ID. No.: 238.

Figure 120 shows nucleic acid SEQ. ID No.: 239 and amino acid SEQ. ID. No.: 240.

Figure 121 shows nucleic acid SEQ. ID No.: 241 and amino acid SEQ. ID. No.: 242.

Figure 122 shows nucleic acid SEQ. ID No.: 243 and amino acid SEQ. ID. No.: 244.

Figure 123 shows nucleic acid SEQ. ID No.: 245 and amino acid SEQ. ID. No.: 246.

Figure 124 shows nucleic acid SEQ. ID No.: 247 and amino

acid SEQ. ID. No.: 248.

Figure 125 shows nucleic acid SEQ. ID No.: 249 and amino acid SEQ. ID. No.: 250.

Figure 126 shows nucleic acid SEQ. ID No.: 251 and amino acid SEQ. ID. No.: 252.

Figure 127 shows nucleic acid SEQ. ID No.: 253 and amino acid SEQ. ID. No.: 254.

Figure 128 shows nucleic acid SEQ. ID No.: 255 and amino acid SEQ. ID. No.: 256.

Figure 129 shows nucleic acid SEQ. ID No.: 257 and amino acid SEQ. ID. No.: 258.

Figure 130 shows nucleic acid SEQ. ID No.: 259 and amino acid SEQ. ID. No.: 260.

Figure 131 shows nucleic acid SEQ. ID No.: 261 and amino acid SEQ. ID. No.: 262.

Figure 132 shows nucleic acid SEQ. ID No.: 263 and amino acid SEQ. ID. No.: 264.

Figure 133 shows nucleic acid SEQ. ID No.: 265 and amino acid SEQ. ID. No.: 266.

Figure 134 shows nucleic acid SEQ. ID No.: 267 and amino acid SEQ. ID. No.: 268.

Figure 135 shows nucleic acid SEQ. ID No.: 269 and amino acid SEQ. ID. No.: 270.

Figure 136 shows nucleic acid SEQ. ID No.: 271 and amino acid SEQ. ID. No.: 272.

Figure 137 shows nucleic acid SEQ. ID No.: 273 and amino acid SEQ. ID. No.: 274.

Figure 138 shows nucleic acid SEQ. ID No.: 275 and amino acid SEQ. ID. No.: 276.

Figure 139 shows nucleic acid SEQ. ID No.: 277 and amino acid SEQ. ID. No.: 278.

Figure 140 shows nucleic acid SEQ. ID No.: 279 and amino acid SEQ. ID. No.: 280.

Figure 141 shows nucleic acid SEQ. ID No.: 281 and amino acid SEQ. ID. No.: 282.

Figure 142 shows nucleic acid SEQ. ID No.: 283 and amino acid SEQ. ID. No.: 284.

Figure 143 shows nucleic acid SEQ. ID No.: 285 and amino acid SEQ. ID. No.: 286.

Figure 144 shows nucleic acid SEQ. ID No.: 287 and amino acid SEQ. ID. No.: 288.

Figure 145 shows nucleic acid SEQ. ID No.: 289 and amino acid SEQ. ID. No.: 290.

Figure 146 shows nucleic acid SEQ. ID No.: 291 and amino acid SEQ. ID. No.: 292.

Figure 147 shows nucleic acid SEQ. ID No.: 293 and amino acid SEQ. ID. No.: 294.

Figure 148 shows nucleic acid SEQ. ID No.: 295 and amino acid SEQ. ID. No.: 296.

Figure 149 shows nucleic acid SEQ. ID No.: 297 and amino acid SEQ. ID. No.: 298.   Figure 151 shows a comparison of Sequence Groups.

Figure 152 illustrates alignment of full length clones.

Figure 153 shows a procedure used for cloning of cytochrome p450 cDNA fragments by PCR

Figure 154 shows nucleic acid SEQ. ID No.: 299 and amino acid SEQ. ID. No.: 300.

Figure 155 shows nucleic acid SEQ. ID No.: 301 and amino acid SEQ. ID. No.: 302.

Figure 156 shows nucleic acid SEQ. ID No.: 303 and amino acid SEQ. ID. No.: 304.

Figure 157 shows nucleic acid SEQ. ID No.: 305 and amino

acid SEQ. ID. No.: 306.

Figure 158 shows nucleic acid SEQ. ID No.: 307 and amino acid SEQ. ID. No.: 308.

Figure 159 shows nucleic acid SEQ. ID No.: 309 and amino acid SEQ. ID. No.: 310.

Figure 160 shows nucleic acid SEQ. ID No.: 311 and amino acid SEQ. ID. No.: 312.

Figure 161 shows nucleic acid SEQ. ID No.: 313 and amino acid SEQ. ID. No.: 314.

Figure 162 shows nucleic acid SEQ. ID No.: 315 and amino acid SEQ. ID. No.: 316.

Figure 163 shows probe set sequences of all clones on GeneChip.

DETAILED DESCRIPTION

DEFINITIONS

Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. Singleton et al. (1994) Dictionary of Microbiology and Molecular Biology, second edition, John Wiley and Sons (New York) provides one of skill with a general dictionary of many of the terms used in this invention. All patents and publications referred to herein are incorporated by reference herein. For purposes of the present invention, the following terms are defined below.

"Enzymatic activity" is meant to include demethylation, hydroxylation, epoxidation, N-oxidation, sulfooxidation, N-, S-, and O- dealkylations, desulfation, deamination, and reduction of azo, nitro, and N-oxide groups. The term

"nucleic acid" refers to a deoxyribonucleotide or ribonucleotide polymer in either single- or double-stranded form, or sense or anti-sense, and unless otherwise limited, encompasses known analogues of natural nucleotides that hybridize to nucleic acids in a manner similar to naturally occurring nucleotides. Unless otherwise indicated, a particular nucleic acid sequence includes the complementary sequence thereof. The terms "operably linked", "in operable combination", and "in operable order" refer to functional linkage between a nucleic acid expression control sequence (such as a promoter, signal sequence, or array of transcription factor binding sites) and a second nucleic acid sequence, wherein the expression control sequence affects transcription and/or translation of the nucleic acid corresponding to the second sequence.

The term "recombinant" when used with reference to a cell indicates that the cell replicates a heterologous nucleic acid, expresses said nucleic acid or expresses a peptide, heterologous peptide, or protein encoded by a heterologous nucleic acid. Recombinant cells can express genes or gene fragments in either the sense or antisense form that are not found within the native (non- recombinant) form of the cell. Recombinant cells can also express genes that are found in the native form of the cell, but wherein the genes are modified and re- introduced into the cell by artificial means.

A "structural gene" is that portion of a gene comprising a DNA segment encoding a protein, polypeptide or a portion thereof, and excluding the 5' sequence which drives the initiation of transcription. The structural gene may

alternatively encode a nontranslatable product. The structural gene may be one which is normally found in the cell or one which is not normally found in the cell or cellular location wherein it is introduced, in which case it is termed a "heterologous gene". A heterologous gene may be derived in whole or in part from any source known to the art, including a bacterial genome or episome, eukaryotic, nuclear or plasmid DNA, cDNA, viral DNA or chemically synthesized DNA. A structural gene may contain one or more modifications that could effect biological activity or its characteristics, the biological activity or the chemical structure of the expression product, the rate of expression or the manner of expression control. Such modifications include, but are not limited to, mutations, insertions, deletions and substitutions of one or more nucleotides. The structural gene may constitute an uninterrupted coding sequence or it may include one or more introns, bounded by the appropriate splice junctions. The structural gene may be translatable or non-translatable, including in an anti-sense orientation. The structural gene may be a composite of segments derived from a plurality of sources and from a plurality of gene sequences (naturally occurring or synthetic, where synthetic refers to DNA that is chemically synthesized).

"Derived from" is used to mean taken, obtained, received, traced, replicated or descended from a source (chemical and/or biological). A derivative may be produced by chemical or biological manipulation (including, but not limited to, substitution, addition, insertion, deletion, extraction, isolation, mutation and replication) of the original source.

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"Chemically synthesized", as related to a sequence of DNA, means that portions of the component nucleotides were assembled in vitro. Manual chemical synthesis of DNA may be accomplished using well established procedures (Caruthers, *Methodology of DNA and RNA Sequencing*, (1983), Weissman (ed.), Praeger Publishers, New York, Chapter 1); automated chemical synthesis can be performed using one of a number of commercially available machines.

Optimal alignment of sequences for comparison may be conducted by the local homology algorithm of Smith and Waterman, Adv. Appl. Math. 2:482 (1981), by the homology alignment algorithm of Needleman and Wunsch, J. Mol. Biol. 48:443 (1970), by the search for similarity method of Pearson and Lipman Proc. Natl. Acad. Sci. (U.S.A.) 85: 2444 (1988), by computerized implementations of these algorithms (GAP, BESTFIT, FASTA, and TFASTA in the Wisconsin Genetics Software Package, Genetics Computer Group, 575 Science Dr., Madison, Wis.), or by inspection.

The NCBI Basic Local Alignment Search Tool (BLAST) (Altschul et al., 1990) is available from several sources, including the National Center for Biological Information (NCBI, Bethesda, Md.) and on the Internet, for use in connection with the sequence analysis programs blastp, blastn, blastx, tblastn and tblastx. It can be accessed at htp://www.ncbi.nlm.nih.gov/BLAST/. A description of how to determine sequence identity using this program is available at http://www.ncbi.nlm.nih.gov/BLAST/blast help.html.

The terms "substantial amino acid identity" or "substantial amino acid sequence identity" as applied to amino acid sequences and as used herein denote a characteristic of a polypeptide, wherein the peptide comprises a sequence that has at least 70 percent sequence identity, preferably 80 percent amino acid sequence identity, more preferably 90 percent amino acid sequence identity, and most preferably at least 99 to 100 percent sequence identity as compared to a reference group over region corresponding to the first amino acid following the cytochrome p450 motif GXRXCX(G/A) to the stop codon of the translated peptide.

The terms "substantial nucleic acid identity" or "substantial nucleic acid sequence identity" as applied to nucleic acid sequences and as used herein denote a characteristic of a polynucleotide sequence, wherein the polynucleotide comprises a sequence that has at least 75 percent sequence identity, preferably 81 percent amino acid sequence identity, more preferably at least 91 percent sequence identity, and most preferably at least 99 to 100 percent sequence identity as compared to a reference group over region corresponding to the first nucleic acid following the cytochrome p450 motif GXRXCX(G/A) to the stop codon of the translated peptide.

Another indication that nucleotide sequences are substantially identical is if two molecules hybridize to each other under stringent conditions. Stringent conditions are sequence-dependent and will be different in different circumstances. Generally, stringent conditions are selected to be about 5°C to about 20°C, usually about 10°C to about 15°C,

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lower than the thermal melting point (Tm) for the specific
sequence at a defined ionic strength and pH. The Tm is the
temperature (under defined ionic strength and pH) at which 50%
of the target sequence hybridizes to a matched probe.
Typically, stringent conditions will be those in which the
salt concentration is about 0.02 molar at pH 7 and the
temperature is at least about 60°C. For instance in a
standard Southern hybridization procedure, stringent
conditions will include an initial wash in 6xSSC at 42 °C
followed by one or more additional washes in 0.2xSSC at a
temperature of at least about 55°C, typically about 60°C and
often about 65°C.

Nucleotide sequences are also substantially identical for
purposes of this invention when the polypeptides and/or
proteins which they encode are substantially identical. Thus,
where one nucleic acid sequence encodes essentially the same
polypeptide as a second nucleic acid sequence, the two nucleic
acid sequences are substantially identical, even if they would
not hybridize under stringent conditions due to degeneracy
permitted by the genetic code (see, Darnell et al. (1990)
Molecular Cell Biology, Second Edition Scientific American
Books W. H. Freeman and Company New York for an explanation of
codon degeneracy and the genetic code).   Protein purity or
homogeneity can be indicated by a number of means well known
in the art, such as polyacrylamide gel electrophoresis of a
protein sample, followed by visualization upon staining. For
certain purposes high resolution may be needed and HPLC or a
similar means for purification may be utilized.

As used herein, the term "vector" is used in reference to

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nucleic acid molecules that transfer DNA segment(s) into a cell. A vector may act to replicate DNA and may reproduce independently in a host cell. The term "vehicle" is sometimes used interchangeably with "vector." The term "expression vector" as used herein refers to a recombinant DNA molecule containing a desired coding sequence and appropriate nucleic acid sequences necessary for the expression of the operably linked coding sequence in a particular host organism. Nucleic acid sequences necessary for expression in prokaryotes usually include a promoter, an operator (optional), and a ribosome binding site, often along with other sequences. Eucaryotic cells are known to utilize promoters, enhancers, and termination and polyadenylation signals.

For the purpose of regenerating complete genetically engineered plants with roots, a nucleic acid may be inserted into plant cells, for example, by any technique such as in vivo inoculation or by any of the known in vitro tissue culture techniques to produce transformed plant cells that can be regenerated into complete plants. Thus, for example, the insertion into plant cells may be by in vitro inoculation by pathogenic or non-pathogenic A. tumefaciens. Other such tissue culture techniques may also be employed.

"Plant tissue" includes differentiated and undifferentiated tissues of plants, including, but not limited to, roots, shoots, leaves, pollen, seeds, tumor tissue and various forms of cells in culture, such as single cells, protoplasts, embryos and callus tissue. The plant tissue may be in planta or in organ, tissue or cell culture.

"Plant cell" as used herein includes plant cells *in planta* and plant cells and protoplasts in culture. "cDNA" or "complementary DNA" generally refers to a single stranded DNA molecule with a nucleotide sequence that is complementary to an RNA molecule. cDNA is formed by the action of the enzyme reverse transcriptase on an RNA template.

STRATEGIES FOR OBTAINING NUCLEIC ACID SEQUENCES

In accordance with the present invention, RNA was extracted from Nicotiana tissue of converter and non-converter Nicotiana lines. The extracted RNA was then used to create cDNA. Nucleic acid sequences of the present invention were then generated using two strategies.

In the first strategy, the poly A enriched RNA was extracted from plant tissue and cDNA was made by reverse transcription PCR. The single strand cDNA was then used to create p450 specific PCR populations using degenerate primers plus a oligo d(T) reverse primer. The primer design was based on the highly conserved motifs of p450. Examples of specific degenerate primers are set forth in Figure 1. Sequence fragments from plasmids containing appropriate size inserts were further analyzed. These size inserts typically ranged from about 300 to about 800 nucleotides depending on which primers were used.

In a second strategy, a cDNA library was initially constructed. The cDNA in the plasmids was used to create p450 specific PCR populations using degenerate primers plus T7 primer on plasmid as reverse primer. As in the first

strategy, sequence fragments from plasmids containing appropriate size inserts were further analyzed.

Nicotiana plant lines known to produce high levels of nornicotine (converter) and plant lines having undetectable levels of nornicotine may be used as starting materials.

Leaves can then be removed from plants and treated with ethylene to activate p450 enzymatic activities defined herein. Total RNA is extracted using techniques known in the art. cDNA fragments can then be generated using PCR (RT-PCR) with the oligo d(T) primer as described in Figure 153. The cDNA library can then be constructed more fully described in examples herein.

The conserved region of p450 type enzymes can be used as a template for degenerate primers (Figure 75). Using degenerate primers, p450 specific bands can be amplified by PCR. Bands indicative for p450 like enzymes can be identified by DNA sequencing. PCR fragments can be characterized using BLAST search, alignment or other tools to identify appropriate candidates.

Sequence information from identified fragments can be used to develop PCR primers. These primers in combination of plasmid primers in cDNA library were used to clone full length p450 genes. Large-scale Southern reverse analysis was conducted to examine the differential expression for all fragment clones obtained and in some cases full length clones. In this aspect of the invention, these large-scale reverse Southern assays can be conducted using labeled total cDNA's

from different tissues as a probe to hybridize with cloned DNA
fragments in order to screen all cloned inserts.

Nonradioactive and radioactive (P^{32}) Northern blotting
assays were also used to characterize clones p450 fragments
and full length clones.

Peptide specific antibodies were made against several
full-length clones by deriving their amino acid sequence and
selecting peptide regions that were antigenic and unique
relative to other clones. Rabbit antibodies were made to
synthetic peptides conjugated to a carrier protein. Western
blotting analyses or other immunological methods were
performed on plant tissue using these antibodies.

Nucleic acid sequences identified as described above can
be examined by using virus induced gene silencing technology
(VIGS, Baulcombe, Current Opinions in Plant Biology, 1999,
2:109-113).

Peptide specific antibodies were made for several full-
length clones by deriving their amino acid sequence and
selecting peptide regions that were potentially antigenic and
were unique relative to other clones. Rabbit antibodies were
made to synthetic petides conjugated to a carrier protein.
Western blotting analyses were perfomed using these
antibodies.

In another aspect of the invention, interfering RNA
technology (RNAi) is used to further characterize cytochrome
p450 enzymatic activities in Nicotiana plants of the present

invention. The following references which describe this technology are incorporated by reference herein, Smith et al., Nature, 2000, 407:319-320; Fire et al., Nature, 1998, 391:306-311; Waterhouse et al., PNAS, 1998, 95:13959-13964; Stalberg et al., Plant Molecular Biology, 1993, 23:671- 683; Baulcombe, Current Opinions in Plant Biology, 1999, 2:109-113; and Brigneti et al., EMBO Journal, 1998, 17(22):6739-6746. Plants may be transformed using RNAi techniques, antisense techniques, or a variety of other methods described.

Several techniques exist for introducing foreign genetic material into plant cells, and for obtaining plants that stably maintain and express the introduced gene. Such techniques include acceleration of genetic material coated onto microparticles directly into cells (US Patents 4,945,050 to Cornell and 5,141,131 to DowElanco). Plants may be transformed using Agrobacterium technology, see US Patent 5,177,010 to University of Toledo, 5,104,310 to Texas A&M, European Patent Application 0131624B1, European Patent Applications 120516, 159418B1, European Patent Applications 120516, 159418B1 and 176,112 to Schilperoot, US Patents 5,149,645, 5,469,976, 5,464,763 and 4,940,838 and 4,693,976 to Schilperoot, European Patent Applications 116718, 290799, 320500 all to MaxPlanck, European Patent Applications 604662 and 627752 to Japan Nicotiana, European Patent Applications 0267159, and 0292435 and US Patent 5,231,019 all to Ciba Geigy, US Patents 5,463,174 and 4,762,785 both to Calgene, and US Patents 5,004,863 and 5,159,135 both to Agracetus. Other transformation technology includes whiskers technology, see U.S. Patents 5,302,523 and 5,464,765 both to Zeneca. Electroporation technology has also been used to transform

plants, see WO 87/06614 to Boyce Thompson Institute, 5,472,869 and 5,384,253 both to Dekalb, WO9209696 and WO9321335 both to PGS. All of these transformation patents and publications are incorporated by reference. In addition to numerous technologies for transforming plants, the type of tissue which is contacted with the foreign genes may vary as well. Such tissue would include but would not be limited to embryogenic tissue, callus tissue type I and II, hypocotyl, meristem, and the like. Almost all plant tissues may be transformed during dedifferentiation using appropriate techniques within the skill of an artisan.

Foreign genetic material introduced into a plant may include a selectable marker. The preference for a particular marker is at the discretion of the artisan, but any of the following selectable markers may be used along with any other gene not listed herein which could function as a selectable marker. Such selectable markers include but are not limited to aminoglycoside phosphotransferase gene of transposon Tn5 (Aph II) which encodes resistance to the antibiotics kanamycin, neomycin and G418, as well as those genes which code for resistance or tolerance to glyphosate; hygromycin; methotrexate; phosphinothricin (bar); imidazolinones, sulfonylureas and triazolopyrimidine herbicides, such as chlorosulfuron; bromoxynil, dalapon and the like.

In addition to a selectable marker, it may be desirous to use a reporter gene. In some instances a reporter gene may be used without a selectable marker. Reporter genes are genes which are typically not present or expressed in the recipient organism or tissue. The reporter gene typically encodes for

a protein which provide for some phenotypic change or enzymatic property. Examples of such genes are provided in K. Weising et al. Ann. Rev. Genetics, 22, 421 (1988), which is incorporated herein by reference. Preferred reporter genes include without limitation glucuronidase (GUS) gene and GFP genes.

Once introduced into the plant tissue, the expression of the structural gene may be assayed by any means known to the art, and expression may be measured as mRNA transcribed, protein synthesized, or the amount of gene silencing that occurs (see U.S. Patent No. 5,583,021 which is hereby incorporated by reference). Techniques are known for the in vitro culture of plant tissue, and in a number of cases, for regeneration into whole plants (EP Appln No. 88810309.0). Procedures for transferring the introduced expression complex to commercially useful cultivars are known to those skilled in the art.

Once plant cells expressing the desired level of p450 enzyme are obtained, plant tissues and whole plants can be regenerated therefrom using methods and techniques well-known in the art. The regenerated plants are then reproduced by conventional means and the introduced genes can be transferred to other strains and cultivars by conventional plant breeding techniques.

The following examples illustrate methods for carrying out the invention and should be understood to be illustrative of, but not limiting upon, the scope of the invention which is defined in the appended claims.

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EXAMPLES

EXAMPLE I: DEVELOPMENT OF PLANT TISSUE AND ETHYLENE TREATMENT

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Plant Growth

Plants were seeded in pots and grown in a greenhouse for
4 weeks.   The 4 week old seedlings were transplanted into
10   individual pots and grown in the greenhouse for 2 months.   The
plants were watered 2 times a day with water containing 150ppm
NPK fertilizer during growth. The expanded green leaves were
detached from plants to do the ethylene treatment described
below.

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Cell Line 78379

Tobacco line 78379, which is a burley tobacco line
released by the University of Kentucky was used as a source of
20   plant material.   One hundred plants were cultured as standard
in the art of growing tobacco and transplanted and tagged with
a distinctive number (1-100).   Fertilization and field
management were conducted as recommended.

25   Three quarters of the 100 plants converted between 20 and
100% of the nicotine to nornicotine.   One quarter of the 100
plants converted less than 5% of the nicotine to nornicotine.
Plant number 87 had the least conversion (2%) while plant
number 21 had 100% conversion. Plants converting less than 3%
30   were classified as non-converters.   Self-pollinated seed of

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plant number 87 and plant number 21, as well as crossed (21 x 87 and 87 x 21) seeds were made to study genetic and phenotypic differences. Plants from selfed 21 were converters, and 99% of selfs from 87 were non-converters. The other 1% of the plants from 87 showed low conversion (5-15%). Plants from reciprocal crosses were all converters.

Cell Line 4407

Nicotiana line 4407, which is a burley line was used as a source of plant material. Uniform and representative plants (100) were selected and tagged. Of the 100 plants 97 were non-converters and three were converters. Plant number 56 had the least amount of conversion (1.2%) and plant number 58 had the highest level of conversion (96%). Self-pollenated seeds and crossed seeds were made with these two plants.

Plants from selfed-58 segregated with 3:1 converter to non-converter ratio. Plants 58-33 and 58-25, were identified as homozygous converter and nonconverter plant lines, respectively. The stable conversion of 58-33 was confirmed by analysis of its progenies of next generation.

Cell Line PBLB01

PBLB01 is a burley line developed by ProfiGen, Inc. and was used as a source of plant material. The converter plant was selected from foundation seeds of PBLB01.

Ethylene Treatment Procedures

Green leaves were detached from 2-3 month greenhouse grown plants and sprayed with 0.3% ethylene solution (Prep brand Ethephon (Rhone-Poulenc)). Each sprayed leaf was hung in a curing rack equipped with humidifier and covered with plastic. During the treatment, the sample leaves were periodically sprayed with the ethylene solution. Approximately 24-48 hour post ethylene treatment, leaves were collected for RNA extraction. Another sub-sample was taken for metabolic constituent analysis to determine the concentration of leaf metabolites and more specific constituents of interest such as a variety of alkaloids.

As an example, alkaloids analysis could be performed as follows. Samples (0.1 g) were shaken at 150 rpm with 0.5 ml 2N NaOH, and a 5 ml extraction solution which contained quinoline as an internal standard and methyl t-butyl ether. Samples were analyzed on a HP 6890 GC equipped with a FID detector. A temperature of 250°C was used for the detector and injector. An HP column (30m-0.32nm-1m) consisting of fused silica crosslinked with 5% phenol and 95% methyl silicon was used at a temperature gradient of 110-185 °C at 10°C per minute. The column was operated at 100°C with a flow rate of

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1.7cm^{3}min^{-1} with a split ratio of 40:1 with a 2·1 injection volume using helium as the carrier gas.

EXAMPLE 2: RNA ISOLATION

For RNA extractions, middle leaves from 2 month old greenhouse grown plants were treated with ethylene as described. The 0 and 24-48 hours samples were used for RNA extraction. In some cases, leaf samples under the senescence process were taken from the plants 10 days post flower-head removal. These samples were also used for extraction. Total RNA was isolated using Rneasy Plant Mini Kit® (Qiagen, Inc., Valencia, California) following manufacturer's protocol.

The tissue sample was ground under liquid nitrogen to a fine powder using a DEPC treated mortar and pestle. Approximately 100 milligrams of ground tissue were transferred to a sterile 1.5 ml eppendorf tube. This sample tube was placed in liquid nitrogen until all samples were collected. Then, 450μ-1 of Buffer RLT as provided in the kit (with the addition of Mercaptoethanol) was added to each individual tube. The sample was vortexed vigorously and incubated at 56° C for 3 minutes. The lysate was then, applied to the QIAshredder™ spin column sitting in a 2-ml collection tube, and centrifuged for 2 minutes at maximum speed. The flow through was collected and 0.5 volume of ethanol was added to the cleared lysate. The sample is mixed well and transferred to an Rneasy® mini spin column sitting in a 2 ml collection tube. The sample was centrifuged for 1 minute at 10,000rpm. Next, 700μl of buffer RW1 was pipetted onto the Rneasy® column

and centrifuged for 1 minute at 10,000rpm. Buffer RPE was pipetted onto the Rneasy® column in a new collection tube and centrifuged for 1 minute at 10,000 rpm. Buffer RPE was again, added to the Rneasy® spin column and centrifuged for 2 minutes at maximum speed to dry the membrane. To eliminate any ethanol carry over, the membrane was placed in a separate collection tube and centrifuged for an additional 1 minute at maximum speed. The Rneasy® column was transferred into a new 1.5 ml collection tube, and 40 µl of Rnase-free water was pipetted directly onto the Rneasy® membrane. This final elute tube was centrifuged for 1 minute at 10,000rpm. Quality and quantity of total RNA was analyzed by denatured formaldehyde gel and spectrophotometer.

Poly(A)RNA was isolated using Oligotex™ poly A+ RNA purification kit (Qiagen Inc.) following manufacture's protocol. About 200 µg total RNA in 250 µl maximum volume was used. A volume of 250µl of Buffer OBB and 15 µl of Oligotex™ suspension was added to the 250 µl of total RNA. The contents were mixed thoroughly by pipetting and incubated for 3 minutes at 70°C on a heating block. The sample was then, placed at room temperature for approximately 20 minutes. The oligotex:mRNA complex was pelleted by centrifugation for 2 minutes at maximum speed. All but 50 µl of the supernatant was removed from the microcentrifuge tube. The sample was treated further by OBB buffer. The oligotex:mRNA pellet was resuspended in 400 µl of Buffer OW2 by vortexing. This mix was transferred onto a small spin column placed in a new tube and centrifuged for 1 minute at maximum speed. The spin column

was transferred to a new tube and an additional 400 µl of
Buffer OW2 was added to the column. The tube was then
centrifuged for 1 minute at maximum speed. The spin column
was transferred to a final 1.5ml microcentrifuge tube. The
sample was eluted with 60 ul of hot (70°C) Buffer OEB. Poly A
product was analyzed by denatured formaldehyde gels and
spectrophotometric analysis.

EXAMPLE 3: REVERSE TRANSCRIPTION-PCR

First strand cDNA was produced using SuperScript
reverse transcriptase following manufacturer's protocol
(Invitrogen, Carlsbad, California). The poly A+ enriched
RNA/oligo dT primer mix consisted of less than 5 µg of total
RNA, 1 µl of 10mM dNTP mix, 1 µl of Oligo d(T)$_{12-18}$
(0.5µg/µl), and up to 10 µl of DEPC-treated water. Each
sample was incubated at 65˚C for 5 minutes, then placed on
ice for at least 1 minute. A reaction mixture was prepared
by adding each of the following components in order: 2 µl
10X RT buffer, 4 µl of 25 mM MgC12, 2µl of 0.1 M DTT, and 1
µl of RNase OUT Recombinant RNase Inhibitor. An addition of
9 µl of reaction mixture was pipetted to each RNA/primer
mixture and gently mixed. It was incubated at 42˚C for 2
minutes and 1 µl of Super Script II™ RT was added to each
tube. The tube was incubated for 50 minutes at 42˚C. The
reaction was terminated at 70˚ C for 15 minutes and chilled
on ice. The sample was collected by centrifugation and 1 µl
of RNase H was added to each tube and incubated for 20
minutes at 37˚C. The second PCR was carried out with 200
pmoles of forward primer (degenerate primers as in Figure

75, SEQ.ID Nos. 149-156) and 100 pmoles reverse primer (mix
of 18nt oligo d(T) followed by 1 random base).

5   Reaction conditions were 94˚C for 2 minutes and then
performed 40 cycles of PCR at 94˚C for 1 minute, 45˚ to 60˚C
for 2 minutes, 72˚C for 3 minutes with a 72˚C extension for
an extra 10 min.

10 Ten microliters of the amplified sample were analyzed
by electrophoresis using a 1% agarose gel. The correct size
fragments were purified from agarose gel.

EXAMPLE 4: GENERATION OF PCR FRAGMENT POPULATIONS
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PCR fragments from Example 3 were ligated into a pGEM-
T® Easy Vector (Promega, Madison, Wisconsin) following
manufacturer's instructions. The ligated product was
transformed into JM109 competent cells and plated on LB
20 media plates for blue/white selection. Colonies were
selected and grown in a 96 well plate with 1.2 ml of LB
media overnight at 37˚C. Frozen stock was generated for all
selected colonies. Plasmid DNA from plates were purified
using Beckman's Biomeck 2000 miniprep robotics with Wizard
25 SV Miniprep® kit (Promega). Plasmid DNA was eluted with
100µl water and stored in a 96 well plate. Plasmids were
digested by EcoR1 and were analyzed using 1% agarose gel to
confirm the DNA quantity and size of inserts. The plasmids
containing a 400-600 bp insert were sequenced using an CEQ
30 2000 sequencer (Beckman, Fullerton, California). The

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sequences were aligned with GenBank database by BLAST
search. The p450 related fragments were identified and
further analyzed. Alternatively, p450 fragments were
isolated from substraction libraries. These fragments were
5   also analyzed as described above.

EXAMPLE 5:   CONSTRUCTION OF CDNA LIBRARY

10   A cDNA library was constructed by preparing total RNA
from ethylene treated leaves as follows. First, total RNA
was extracted from ethylene treated leaves of tobacco line
58-33 using a modified acid phenol and chloroform extraction
protocol. Protocol was modified to use one gram of tissue
15   that was ground and subsequently vortexed in 5 ml of
extraction buffer (100 mM Tris-HCl, pH 8.5; 200 mM NaCl;
10mM EDTA; 0.5% SDS) to which 5 ml phenol (pH5.5) and 5 ml
chloroform was added. The extracted sample was centrifuged
and the supernatant was saved. This extraction step was
20   repeated 2-3 more times until the supernatant appeared
clear. Approximately 5 ml of chloroform was added to remove
trace amounts of phenol. RNA was precipitated from the
combined supernatant fractions by adding a 3-fold volume of
ETOH and 1/10 volume of 3M NaOAc (pH5.2) and storing at -
25   20ºC for 1 hour. After transferring to a Corex glass
container the RNA fraction was centrifuged at 9,000 RPM for
45 minutes at 4ºC. The pellet was washed with 70% ethanol
and spun for 5 minutes at 9,000 RPM at 4ºC. After drying
the pellet, the pelleted RNA was dissolved in 0.5 ml RNase
30   free water. The pelleted RNA was dissolved in 0.5 ml RNase
free water. The quality and quantity of total RNA was

analyzed by denatured formaldehyde gel and
spectrophotometer, respectively.

The resultant total RNA was isolated for poly A+ RNA
using an Oligo(dT) cellulose protocol (Invitrogen) and
Microcentrifuge spin columns (Invitrogen) by the following
protocol. Approximately twenty mg of total RNA was
subjected to twice purification to obtain high quality poly
A+ RNA. Poly A+ RNA product was analyzed by performing
denatured formaldehyde gel and subsequent RT-PCR of known
full-length genes to ensure high quality of mRNA.

Next, poly A+ RNA was used as template to produce a
cDNA library employing cDNA synthesis kit, ZAP-cDNA®
synthesis kit, and ZAP-cDNA® Gigapack® III gold cloning kit
(Stratagene, La Jolla, California). The method involved
following the manufacture's protocol as specified.
Approximately 8 µg of poly A+ RNA was used to construct cDNA
library. Analysis of the primary library revealed about 2.5
x 10^6 - 1x 10^7 pfu. A quality background test of the
library was completed by complementation assays using IPTG
and X-gal, where recombinant plaques was expressed at more
than 100-fold above the background reaction.

A more quantitative analysis of the library by random
PCR showed that average size of insert cDNA was
approximately 1.2 kb. The method used a two-step PCR method
as followed. For the first step, reverse primers were
designed based on the preliminary sequence information
obtained from p450 fragments. The designed reverse primers

and T3 (forward) primers were used amplify corresponding
genes from the cDNA library. PCR reactions were subjected
to agarose electrophoresis and the corresponding bands of
high molecular weight were excised, purified, cloned and
sequenced. In the second step, new primers designed from
5'UTR or the start coding region of p450 as the forward
primers together with the reverse primers (designed from
3'UTR of p450) were used in the subsequent PCR to obtain
full-length p450 clones.

The p450 fragments were generated by PCR amplification
from the constructed cDNA library as described in Example 3
with the exception of the reverse primer. The T7 primer
located on the plasmid downstream of cDNA inserts (see
Figure 75) was used as a reverse primer. PCR fragments were
isolated, cloned and sequenced as described in Example 4.

Full-length p450 genes were isolated by PCR method from
constructed cDNA library. Gene specific reverse primers
(designed from the downstream sequence of p450 fragments)
and a forward primer (T3 on library plasmid) were used to
clone the full length genes. PCR fragments were isolated,
cloned and sequenced. If necessary, second step PCR was
applied. In the second step, new forward primers designed
from 5'UTR of cloned p450s together with the reverse primers
designed from 3'UTR of p450 clones were used in the
subsequent PCR reactions to obtain full-length p450 clones.
The clones were subsequently sequenced.

EXAMPLE 6: CHARACTERIZATION OF CLONED FRAGMENTS - REVERSE
SOUTHERN BLOTTING ANALYSIS

Nonradioactive large scale reverse southern blotting
5   assays were performed on all p450 clones identified in above
examples to detect the differential expression. It was
observed that the level of expression among different p450
clusters was very different. Further real time detection
was conducted on those with high expression.
10

Nonradioactive Southern blotting procedures were
conducted as follows.
1)   Total RNA was extracted from ethylene treated and
nontreated converter (58-33) and nonconverter (58-25) leaves
15   using the Qiagen Rnaeasy kit as described in Example 2.

2)   Probe was produced by biotin-tail labeling a single
strand cDNA derived from poly A+ enriched RNA generated in
above step. This labeled single strand cDNA was generated
20   by RT-PCR of the converter and nonconverter total RNA
(Invitrogen) as described in Example 3 with the exception of
using biotinalyted oligo dT as a primer (Promega). These
were used as a probe to hybridize with cloned DNA.

25   3)   Plasmid DNA was digested with restriction enzyme
EcoR1 and run on agarose gels. Gels were simultaneously
dried and transferred to two nylon membranes (Biodyne B®).
One membrane was hybridized with converter probe and the
other with nonconverter probe. Membranes were UV-crosslinked

(auto crosslink setting, 254 nm, Stratagene, Stratalinker)
before hybridization.

Alternatively, the inserts were PCR amplified from each
plasmid using the sequences located on both arms of p-GEM
plasmid, T3 and SP6, as primers. The PCR products were
analyzed by running on a 96 well Ready-to-run agarose gels.
The confirmed inserts were dotted on two nylon membranes.
One membrane was hybridized with converter probe and the
other with nonconverter probe.

4)   The membranes were hybridized and washed following
manufacture's instruction with the modification of washing
stringency (Enzo MaxSence™ kit, Enzo Diagnostics, Inc,
Farmingdale, NY). The membranes were prehybridized with
hybridization buffer (2x SSC buffered formamide, containing
detergent and hybridization enhancers) at 42°C for 30 min
and hybridized with 10µl denatured probe overnight at 42°C.
The membranes then were washed in 1X hybridization wash
buffer 1 time at room temperature for 10 min and 4 times at
68°C for 15 min. The membranes were ready for the
detection.

5) The washed membranes were detected by alkaline
phosphatase labeling followed by NBT/BCIP colometric
detection as described in manufacture's detection procedure
(Enzo Diagnostics, Inc.). The membranes were blocked for one
hour at room temperature with 1x blocking solution, washed 3
times with 1X detection reagents for 10 min, washed 2 times
with 1x predevelopment reaction buffer for 5 min and then

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developed the blots in developing solution for 30-45 min until the dots appear. All reagents were provided by manufacture (Enzo Diagnostics, Inc). In Addition, large scale reverse Southern assay was also performed using KPL

5   southern hybridization and detection kit™ following manfacturer's instruction(KPL, Gaithersburg, Maryland).

EXAMPLE 7: CHARACTERIZATION OF CLONES – NORTHERN BLOT

10   ANALYSIS

Alternative to Southern Blot analysis, some membranes were hybridized and detected as described in the example of Northern blotting assays. Northern Hybridization was used

15   to detect mRNA differentially expressed in Nicotiana as follows.

A random priming method was used to prepare probes from cloned p450 (Megaprime™ DNA Labelling Systems, Amersham

20   Biosciences).

The following components were mixed: 25ng denatured DNA template; 4ul of each unlabeled dTTP, dGTP and dCTP; 5ul of reaction buffer; P^{32}-labelled dATP and 2ul of Klenow I; and

25   H_2O, to bring the reaction to 50µl. The mixture was incubated in 37°C for 1-4 hours, then stopped with 2µl of 0.5 M EDTA. The probe was denatured by incubating at 95°C for 5 minutes before use.

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RNA samples were prepared from ethylene treated and
non-treated fresh leaves of several pairs of tobacco lines.
In some cases poly A+ enriched RNA was used. Approximately
15µg total RNA or 1.8µg mRNA (methods of RNA and mRNA
extraction as described in Example 5) were brought to equal
volume with DEPC H_2O (5-10 µl). The same volume of loading
buffer (1 x MOPS; 18.5 % Formaldehyde; 50 % Formamide; 4 %
Ficoll400; Bromophenolblue) and 0.5 µl EtBr (0.5 µg/µl) were
added. The samples were subsequently denatured in
preparation for separation of the RNA by electrophoresis.

Samples were subjected to electrophoresis on a
formaldehyde gel (1 % Agarose, 1 x MOPS, 0.6 M Formaldehyde)
with 1XMOP buffer (0.4 M Morpholinopropanesulfonic acid; 0.1
M Na-acetate-3 x H2O; 10 mM EDTA; adjust to pH 7.2 with
NaOH). RNA was transferred to a Hybond-N+ membrane (Nylon,
Amersham Pharmacia Biotech) by capillary method in 10 X SSC
buffer (1.5 M NaCl; 0.15 M Na-citrate) for 24 hours.
Membranes with RNA samples were UV-crosslinked (auto
crosslink setting, 254 nm, Stratagene, Stratalinker) before
hybridization.

The membrane was prehybridized for 1-4 hours at 42°C
with 5-10 ml prehybridization buffer (5 x SSC; 50 %
Formamide; 5 x Denhardt's-solution; 1 % SDS; 100µg/ml heat-
denatured sheared non- homologous DNA). Old prehybridization
buffer was discarded, and new prehybridization buffer and
probe were added. The hybridization was carried out over
night at 42°C. The membrane was washed for 15 minutes with

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2 x SSC at room temperature, followed by a wash with 2 x SSC.

A major focus of the invention was the discovery of novel genes that may be induced as a result of ethylene treatment or play a key role in tobacco leaf quality and constituents. As illustrated in the table below, Northern blots and reverse Southern Blot were useful in determining which genes were induced by ethylene treatment relative to non-induced plants. Interestingly, not all fragments were affected similarly in the converter and nonconverter. The cytochrome p450 fragments of interest were partially sequenced to determine their structural relatedness. This information was used to subsequently isolate and characterize full length gene clones of interest.

Fragments	Induced mRNA Expression Ethylene Treatment
	Converter
D56-AC7 (SEQ ID No: 35)	+
D56-AG11 (SEQ ID No: 31)	+
D56-AC12 (SEQ ID No: 45)	+
D70A-AB5 (SEQ ID No: 95)	+
D73-AC9 (SEQ ID No: 43)	+
D70A-AA12 (SEQ ID No: 131)	+
D73A-AG3 (SEQ ID No: 129)	+
D34-52 (SEQ ID No: 61)	+
D56-AG6 (SEQ ID No: 51)	+

        Northern analysis was performed using full length
clones on tobacco tissue obtained from converter and
nonconverter burley lines that were induced by ethylene
treatment. The purpose was to identify those full length
clones that showed elevated expression in ethylene induced
converter lines relative to ethylene induced converter lines
relative to ethylene induced nonconverter burley lines. By
so doing, the functionality relationship of full length
clones may be determined by comparing biochemical
differences in leaf constituents between converter and
nonconverter lines. As shown in table below, six clones
showed significantly higher expression, as denoted by ++ and
+++, in converter ethylene treated tissue than that of
nonconverter treated tissue, denoted by +. All of these
clones showed little or no expression in converter and
nonconverter lines that were not ethylene treated.

Full Length Clones	Converter	Nonconverter

D101-BA2	++	+
D207-AA5	++	+
D208-AC8	+++	+
D237-AD1	++	+
D89-AB1	++	+
D90A-BB3	++	+

EXAMPLE 8: IMMUNODETECTION OF p450S ENCODED BY THE CLONED GENES

Peptide regions corresponding to 20-22 amino acids in length from three p450 clones were selected for 1) having lower or no homology to other clones and 2) having good hydrophilicity and antigenicity. The amino acid sequences of the peptide regions selected from the respective p450 clones are listed below. The synthesized peptides were conjugated with KHL and then injected into rabbits. Antisera were collected 2 and 4 weeks after the 4th injection (Alpha Diagnostic Intl. Inc. San Antonio, TX).

D234-AD1   DIDGSKSKLVKAHRKIDEILG
D90a-BB3   RDAFREKETFDENDVEELNY
D89-AB1   FKNNGDEDRHFSQKLGDLADKY

Antisera were examined for crossreactivity to target proteins from tobacco plant tissue by Western Blot analysis. Crude protein extracts were obtained from ethylene treated (0 to 40 hours) middle leaves of converter and nonconverter lines. Protein concentrations of the extracts were

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determined using RC DC Protein Assay Kit (BIO-RAD) following the manufacturer's protocol.

Two micrograms of protein were loaded onto each lane and the proteins separated on 10% - 20% gradient gels using the Laemmli SDS-PAGE system. The proteins were transferred from gels to PROTRAN® Nitrocellulose Transfer Membranes (Schleicher & Schuell) with the Trans-Blot® Semi-Dry cell (BIO-RAD). Target p450 proteins were detected and visualized with the ECL Advance™ Western Blotting Detection Kit (Amersham Biosciences). Primary antibodies against the synthetic-KLH conjugates were made in rabbits. Secondary antibody against rabbit IgG, coupled with peroxidase, was purchased from Sigma. Both primary and secondary antibodies were used at 1:1000 dilutions. Antibodies showed strong reactivity to a single band on the Western Blots indicating that the antisera were monospecific to the target peptide of interest. Antisera were also crossreactive with synthetic peptides conjuated to KLH.

EXAMPLE 9: NUCLEIC ACID IDENTITY AND STRUCTURE RELATEDNESS OF ISOLATED NUCLEIC ACID FRAGMENTS

Over 100 cloned p450 fragments were sequenced in conjunction with Northern blot analysis to determine their structural relatedness. The approach used utilized forward primers based either of two common p450 motifs located near the carboxyl-terminus of the p450 genes. The forward primers corresponded to cytochrome p450 motifs FXPERF or GRRXCP(A/G) as denoted in Figure 1. The reverse primers used standard primers from either the plasmid, SP6 or T7

located on both arms of pGEM™ plasmid, or a poly A tail.
The protocol used is described below.

Spectrophotometry was used to estimate the
concentration of starting double stranded DNA following the
manufacturer's protocol (Beckman Coulter). The template was
diluted with water to the appropriate concentration,
denatured by heating at 95˙ C for 2 minutes, and
subsequently placed on ice. The sequencing reaction was
prepared on ice using 0.5 to 10μl of denatured DNA template,
2 μl of 1.6 pmole of the forward primer, 8 μl of DTCS Quick
Start Master Mix and the total volume brought to 20 μl with
water. The thermocycling program consisted of 30 cycles of
the follow cycle: 96˙ C for 20 seconds, 50˙ C for 20
seconds, and 60˙ C for 4 minutes followed by holding at 4˙
C.

The sequence was stopped by adding 5 μl of stop buffer
(equal volume of 3M NaOAc and 100mM EDTA and 1 μl of 20
mg/ml glycogen). The sample was precipitated with 60 μl of
cold 95% ethanol and centrifuged at 6000g for 6 minutes.
Ethanol was discarded. The pellet was 2 washes with 200 μl
of cold 70% ethanol. After the pellet was dry, 40 μl of SLS
solution was added and the pellet was resuspended. A layer
of mineral oil was over laid.   The sample was then, placed
on the CEQ 8000 Automated Sequencer for further analysis.

In order to verify nucleic acid sequences, nucleic acid
sequence was re-sequenced in both directions using forward
primers to the FXPERF or GRRXCP(A/G) region of the p450 gene

or reverse primers to either the plasmid or poly A tail. All
sequencing was performed at least twice in both directions.

The nucleic acid sequences of cytochrome p450 fragments
were compared to each other from the coding region
corresponding to the first nucleic acid after the region
encoding the GRRXCP(A/G) motif through to the stop codon.
This region was selected as an indicator of genetic
diversity among p450 proteins. A large number of
genetically distinct p450 genes, in excess of 70 genes, were
observed, similar to that of other plant species. Upon
comparison of nucleic acid sequences, it was found that the
genes could be placed into distinct sequences groups based
on their sequence identity. It was found that the best
unique grouping of p450 members was determined to be those
sequences with 75% nucleic acid identity or greater (shown
in Table I). Reducing the percentage identity resulted in
significantly larger groups. A preferred grouping was
observed for those sequences with 81% nucleic acid identity
or greater, a more preferred grouping 91% nucleic acid
identity or greater, and a most preferred grouping for those
sequences 99% nucleic acid identity of greater. Most of the
groups contained at least two members and frequently three
or more members. Others were not repeatedly discovered
suggesting that approach taken was able to isolated both low
and high expressing mRNA in the tissue used.

Based on 75% nucleic acid identity or greater, two
cytochrome p450 groups were found to contain nucleic acid
sequence identity to previously tobacco cytochrome genes
that genetically distinct from that within the group. Group

23, showed nucleic acid identity, within the parameters used
for Table I, to prior GenBank sequences of GI:1171579
(CAA64635) and GI:14423327 (or AAK62346) by Czernic et al
and Ralston et al, respectively. GI:1171579 had nucleic

5   acid identity to Group 23 members ranging 96.9% to 99.5%
identity to members of Group 23 while GI:14423327 ranged
95.4% to 96.9% identity to this group. The members of Group
31 had nucleic acid identity ranging from 76.7% to 97.8%
identity to the GenBank reported sequence of GI:14423319

10   (AAK62342) by Ralston et al. None of the other p450
identity groups of Table 1 contained parameter identity, as
used in Table 1, to Nicotiana p450s genes reported by
Ralston et al, Czernic et al., Wang et al or LaRosa and
Smigocki.

15

     As shown in Figure 76, consensus sequence with
appropriate nucleic acid degenerate probes could be derived
for group to preferentially identify and isolate additional
members of each group from Nicotiana plants.

20

Table I: Nicotiana p450 Nucleic Acid Sequence Identity
Groups

GROUP   FRAGMENTS

1   D58-BG7 (SEQ ID No.:1), D58-AB1 (SEQ ID No.:3); D58-BE4
(SEQ ID No.:7)

2   D56-AH7 (SEQ ID No.:9); D13a-5 (SEQ ID No.:11)

3   D56-AG10 (SEQ ID No.:13); D35-33 (SEQ ID No.:15);
D34-62 (SEQ ID No.:17)

4   D56-AA7 (SEQ ID No.:19); D56-AE1 (SEQ ID No.:21);
185-BD3 (SEQ ID No.:143)

5   D35-BB7 (SEQ ID No.:23); D177-BA7 (SEQ ID No.:25);
D56A-AB6 (SEQ ID No.:27); D144-AE2 (SEQ ID No.:29)

6   D56-AG11 (SEQ ID No.:31); D179-AA1 (SEQ ID No.:33)

7   D56-AC7 (SEQ ID No.:35); D144-AD1 (SEQ ID No.:37)

8   D144-AB5 (SEQ ID No.:39)

9   D181-AB5 (SEQ ID No.:41); D73-Ac9 (SEQ ID No.:43)

10   D56-AC12 (SEQ ID No.:45)

11   D58-AB9 (SEQ ID No.:47); D56-AG9 (SEQ ID No.:49);
D56-AG6 (SEQ ID No.:51); D35-BG11 (SEQ ID No.:53);   D35-42
(SEQ ID No.:55); D35-BA3 (SEQ ID No.:57);   D34-57 (SEQ ID
No.:59); D34-52 (SEQ ID No.:61);   D34-25 (SEQ ID No.:63)

12   D56-AD10 (SEQ ID No.:65)

13   56-AA11 (SEQ ID No.:67)

14   D177-BD5 (SEQ ID No.:69); D177-BD7 (SEQ ID No.:83)

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15   D56A-AG10 (SEQ ID No.:71); D58-BC5 (SEQ ID No.:73);
D58-AD12 (SEQ ID No.:75)

16   D56-AC11 (SEQ ID No.:77); D35-39 (SEQ ID No.:79);
D58-BH4 (SEQ ID No.:81); D56-AD6 (SEQ ID No.:87)   —

17   D73A-AD6 (SEQ ID No.:89); D70A-BA11 (SEQ ID No.:91)

18   D70A-AB5 (SEQ ID No.:95); D70A-AA8 (SEQ ID No.:97)

19   D70A-AB8 (SEQ ID No.:99); D70A-BH2 (SEQ ID No.:101);
D70A-AA4 (SEQ ID No.:103)

20   D70A-BA1 (SEQ ID No.:105); D70A-BA9 (SEQ ID No.:107)

21   D70A-BD4 (SEQ ID No.:109)

22   D181-AC5 (SEQ ID No.:111); D144-AH1 (SEQ ID No.:113);
D34-65 (SEQ ID No.:115)

23   D35-BG2 (SEQ ID No.:117)

24   D73A-AH7 (SEQ ID No.:119)

25   D58-AA1 (SEQ ID No.:121); D185-BC1 (SEQ ID No.:133);
D185-BG2 (SEQ ID No.:135)

26   D73-AE10 (SEQ ID No.:123)

27   D56-AC12 (SEQ ID No.:125)

28   D177-BF7 (SEQ ID No.:127); D185-BE1 (SEQ ID No.:137);
D185-BD2 (SEQ ID No.:139)

29   D73A-AG3 (SEQ ID No.:129)

30   D70A-AA12 (SEQ ID No.:131); D176-BF2 (SEQ ID No.:85)

31   D176-BC3 (SEQ ID No.:145)

32   D176-BB3 (SEQ ID No.: 147)

33   D186-AH4 (SEQ ID No.:5)

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EXAMPLE 10: RELATED AMINO ACID SEQUENCE IDENTITY OF
ISOLATED NUCLEIC ACID FRAGMENTS

5   The amino acid sequences of nucleic acid sequences
      obtained for cytochrome p450 fragments from Example 8 were
      deduced. The deduced region corresponded to the amino acid
      immediately after the GXRXCP(A/G) sequence motif to the end
      of the carboxyl-terminus, or stop codon. Upon comparison of
10   sequence identity of the fragments, a unique grouping was
      observed for those sequences with 70% amino acid identity or
      greater. A preferred grouping was observed for those
      sequences with 80% amino acid identity or greater, more
      preferred with 90% amino acid identity or greater, and a
15   most preferred grouping for those sequences 99% amino acid
      identity of greater. The groups and corresponding amino
      acid sequences of group members are shown in Figure 2.
      Several of the unique nucleic acid sequences were found to
      have complete amino acid identity to other fragments and
20   therefore only one member with the identical amino acid was
      reported.

          The amino acid identity for Group 19 of Table II
      corresponded to three distinct groups based on their nucleic
25   acid sequences. The amino acid sequences of each group
      member and their identity is shown in Figure. 77. The amino
      acid differences are appropriated marked.

          At least one member of each amino acid identity group
30   was selected for gene cloning and functional studies using
      plants. In addition, group members that are differentially

affected by ethylene treatment or other biological
differences as assessed by Northern and Southern analysis
were selected for gene cloning and functional studies. To
assist in gene cloning, expression studies and whole plant
5   evaluations, peptide specific antibodies will be prepared on
sequence identity and differential sequence.

Table II: Nicotiana p450 Amino Acid Sequence Identity Groups

GROUP   FRAGMENTS

1   D58-BG7 (SEQ ID No.:2), D58-AB1 (SEQ ID No.:4)

2   D58-BE4 (SEQ ID No.:8)

3   D56-AH7 (SEQ ID No.:10); D13a-5 (SEQ ID No.:12)

4   D56-AG10 (SEQ ID
No.:14); D34-62 (SEQ ID No.:18)

5   D56-AA7 (SEQ ID No.:20); D56-AE1 (SEQ ID No.:22); 185-
BD3 (SEQ ID No.:144)

6   D35-BB7 (SEQ ID No.:24); D177-BA7 (SEQ ID No.:26);
D56A-AB6 (SEQ ID No.:28); D144-AE2 (SEQ ID No.:30)

7   D56-AG11 (SEQ ID No.:32); D179-AA1 (SEQ ID No.:34)

8   D56-AC7 (SEQ ID No.:36); D144-AD1 (SEQ ID No.:38)

9   D144-AB5 (SEQ ID No.:40)

10   D181-AB5 (SEQ ID No.:42); D73-Ac9 (SEQ ID No.:44)

11   D56-AC12 (SEQ ID No.:46)

12   D58-AB9 (SEQ ID No.:48); D56-AG9 (SEQ ID No.:50); D56-
AG6 (SEQ ID No.:52); D35-BG11 (SEQ ID No.:54); D35-42 (SEQ
ID No.:56); D35-BA3 (SEQ ID No.:58); D34-57 (SEQ ID
No.:60); D34-52 (SEQ ID No.:62)

13   D56AD10 (SEQ ID No.:66)

14   56-AA11 (SEQ ID No.:68)

15   D177-BD5 (SEQ ID No.:70); D177-BD7 (SEQ ID No.:84)

16   D56A-AG10 (SEQ ID No.:72); D58-BC5 (SEQ ID No.:74); D58-AD12 (SEQ ID No.:76)

17   D56-AC11 (SEQ ID No.:78); D56-AD6 (SEQ ID No.:88)

18   D73A-AD6 (SEQ ID No.90:)

19   D70A-AB5 (SEQ ID No.:96); D70A-AB8 (SEQ ID No.:100); D70A-BH2 (SEQ ID No.:102); D70A-AA4 (SEQ ID No.:104); D70A-BA1 (SEQ ID No.:106); D70A-BA9 (SEQ ID No.:108)

20   D70A-BD4 (SEQ ID No.:110)

21   D181-AC5 (SEQ ID No.:112); D144-AH1 (SEQ ID No.:114); D34-65 (SEQ ID No.:116)

22   D35-BG2 (SEQ ID No.:118)

23   D73A-AH7 (SEQ ID No.:120)

24   D58-AA1 (SEQ ID No.:122); D185-BC1 (SEQ ID No.:134); D185-BG2 (SEQ ID No.:136)

25   D73-AE10 (SEQ ID No.:124)

26   D56-AC12 (SEQ ID No.:126)

27   D177-BF7 (SEQ ID No.:128); 185-BD2 (SEQ ID No.:140)

28   D73A-AG3 (SEQ ID No.:130)

29   D70A-AA12 (SEQ ID No.:132); D176-BF2 (SEQ ID No.:86)

30   D176-BC3 (SEQ ID No.:146)

31   D176-BB3 (SEQ ID No.:148)

32   D186-AH4 (SEQ ID No.:6)

EXAMPLE 11: RELATED AMINO ACID SEQUENCE IDENTITY OF FULL
LENGTH CLONES

The nucleic acid sequence of full length Nicotiana
genes cloned in Example 5 were deduced for their entire
amino acid sequence. Cytochrome p450 genes were identified
by the presence of three conserved p450 domain motifs, which
corresponded to UXXRXXZ, PXRFXF or GXRXC at the carboxyl-
terminus where U is E or K, X is any amino acid and Z is P,
T, S or M. It was also noted that two of the clones
appeared nearly complete but lacked the appropriate stop
codon, D130-AA1 and D101-BA2, however but both contained all
three p450 cytochrome domains. All p450 genes were
characterized for amino acid identity using a BLAST program
comparing their full length sequences to each other and to
known tobacco genes. The program used the NCBI special
BLAST tool (Align two sequences (bl2seq),
http://www.ncbi.nlm.nih.gov/blast/bl2seq/bl2.html). Two
sequences were aligned under BLASTN without filter for
nucleic acid sequences and BLASTP for amino acid sequences.
Based on their percentage amino acid identity, each sequence
was grouped into identity groups where the grouping
contained members that shared at least 85% identity with
another member. A preferred grouping was observed for those
sequences with 90% amino acid identity or greater, a more
preferred grouping had 95% amino acid identity or greater,
and a most preferred grouping had those sequences 99% amino
acid identity or greater. Using these criteria, 25 unique
groups were identified and are depicted in Table III.

Within the parameters used for Table III for amino acid
identity, three groups were found to contain greater than

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85% or greater identity to known tobacco genes. Members of Group 5 had up to 96% amino acid identity for full length sequences to prior GenBank sequences of GI:14423327 (or AAK62346) by Ralston et al. Group 23 had up to 93% amino acid identity to GI:14423328 (or AAK62347) by Ralston et al. and Group 24 had 92% identity to GI:14423318 (or AAK62343) by Ralston et al.

Table III: Amino Acid Sequence Identity Groups of Full Length Nicotiana p450 Genes

1   D208-AD9 (SEQ. ID. No. 224); D120-AH4 (SEQ. ID. No. 180); D121-AA8 (SEQ. ID. No. 182), D122-AF10 (SEQ. ID. No. 184); D103-AH3 (SEQ. ID. No. 222); D208-AC8 (SEQ. ID. No. 218); D-235-ABI (SEQ. ID. No. 246)

2   D244-AD4 (SEQ. ID. No. 250); D244-AB6 (SEQ. ID. No. 274) ; D285-AA8; D285-AB9; D268-AE2 (SEQ. ID. No. 270)

3   D100A-AC3 (SEQ. ID. No. 168); D100A-BE2

4   D205-BE9 (SEQ. ID. No. 276); D205-BG9 (SEQ. ID. No. 202); D205-AH4 (SEQ. ID. No. 294)

5   D259-AB9 (SEQ. ID. No. 260) ; D257-AE4 (SEQ. ID. No. 268); D147-AD3 (SEQ. ID. No. 194)

6   D249-AE8 (SEQ. ID. No. 256); D-248-AA6 (SEQ. ID. No. 254)

7   D233-AG7 (SEQ. ID. No. 266; D224-BD11 (SEQ. ID. No. 240); DAF10

8   D105-AD6 (SEQ. ID. No. 172); D215-AB5 (SEQ. ID. No. 220); D135-AE1 (SEQ. ID. No. 190)

9   D87A-AF3 (SEQ. ID. No. 216), D210-BD4 (SEQ. ID. No. 262)

10   D89-AB1 (SEQ. ID. No. 150); D89-AD2 (SEQ. ID. No. 152);
             163-AG11 (SEQ. ID. No. 198); 163-AF12 (SEQ. ID. No.
             196)

11   D267-AF10 (SEQ. ID. No. 296); D96-AC2 (SEQ. ID. No.
             160); D96-AB6 (SEQ. ID. No. 158); D207-AA5 (SEQ. ID.
             No. 204); D207-AB4 (SEQ. ID. No. 206); D207-AC4 (SEQ.
             ID. No. 208)

12   D98-AG1 (SEQ. ID. No. 164); D98-AA1 (SEQ. ID. No. 162)

13   D209-AA12 (SEQ. ID. No. 212); D209-AA11; D209-AH10
             (SEQ. ID. No. 214); D209-AH12 (SEQ. ID. No. 232);
             D90a-BB3 (SEQ. ID. No. 154)

14   D129-AD10 (SEQ. ID. No. 188); D104A-AE8 (SEQ. ID. No.
             170)

15   D228-AH8 (SEQ. ID. No. 244); D228-AD7 (SEQ. ID. No.
             241), D250-AC11 (SEQ. ID. No. 258); D247-AH1 (SEQ.
             ID. No. 252)

16   D128-AB7 (SEQ. ID. No. 186) ; D243-AA2 (SEQ. ID. No.
             248); D125-AF11 (SEQ. ID. No. 228)

17   D284-AH5 (SEQ. ID. No. 298); D110-AF12 (SEQ. ID. No.
             176)

18   D221-BB8 (SEQ. ID. No. 234)

19   D222-BH4 (SEQ. ID. No. 236)

20   D134-AE11 (SEQ. ID. No. 230)

21   D109-AH8 (SEQ. ID. No. 174)

22   D136-AF4 (SEQ. ID. No. 278)

23   D237-AD1 (SEQ. ID. No. 226)

24   D112-AA5 (SEQ. ID. No. 178)

25   D283-AC1 (SEQ. ID. No. 272)

The full length genes were further grouped based on the
highly conversed amino acid homology between UXXRXXZ p450

domain and GXRXC p450 domain near the end the carboxyl-
terminus. As shown in Figure 3, individual clones were
aligned for their sequence homology between the conserved
domains relative to each other and placed in distinct
identity groups. In several cases, although the nucleic
acid sequence of the clone was unique, the amino acid
sequence for the region was identical. The preferred
grouping was observed for those sequences with 90% amino
acid identity or greater, a more preferred group had 95%
amino acid identity or greater, and a most preferred
grouping had those sequences 99% amino acid identity of
greater. The final grouping was similar to that based on
the percent identity for the entire amino acid sequence of
the clones except for Group 17 (of Table III) which was
divided into two distinct groups.

Within the parameters used for amino acid identity in
Table IV, three groups were found to contain 90% or greater
identity to known tobacco genes. Members of Group 5 had up
to 93.4% amino acid identity for full length sequences to
prior GenBank sequences of GI:14423326 (AAK62346) by Ralston
et al. Group 23 had up to 91.8% amino acid identity to
GI:14423328 (or AAK62347) by Ralston et al. and Group 24 had
98.8% identity to GI:14423318 (or AAK62342) by Ralston et
al.

Table IV: Amino Acid Sequence Identity Groups of Regions
between Conserved Domains of Nicotiana p450 Genes

1 1   D208-AD9 (SEQ. ID. No. 224); D120-AH4 (SEQ. ID. No.
       180); D121-AA8 (SEQ. ID. No. 182), D122-AF10 (SEQ. ID.
       No. 184); D103-AH3 (SEQ. ID. No. 222); D208-AC8 (SEQ.
       ID. No. 218); D-235-ABI (SEQ. ID. No. 246)

  2   D244-AD4 (SEQ. ID. No. 250); D244-AB6 (SEQ. ID. No.
       274) ; D285-AA8; D285-AB9; D268-AE2 (SEQ. ID. No. 270)

  3   D100A-AC3 (SEQ. ID. No. 168); D100A-BE2

  4   D205-BE9 (SEQ. ID. No. 276); D205-BG9 (SEQ. ID. No.
       202); D205-AH4 (SEQ. ID. No. 294)

  5   D259-AB9 (SEQ. ID. No. 260) ; D257-AE4 (SEQ. ID. No.
       268); D147-AD3 (SEQ. ID. No. 194)

  6   D249-AE8 (SEQ. ID. No. 256); D-248-AA6 (SEQ. ID. No.
       254)

  7   D233-AG7 (SEQ. ID. No. 266; D224-BD11 (SEQ. ID. No.
       240); DAF10

  8   D105-AD6 (SEQ. ID. No. 172); D215-AB5 (SEQ. ID. No.
       220); D135-AE1 (SEQ. ID. No. 190)

  9   D87A-AF3 (SEQ. ID. No. 216), D210-BD4 (SEQ. ID. No.
       262)

 10   D89-AB1 (SEQ. ID. No. 150); D89-AD2 (SEQ. ID. No. 152);
       163-AG11 (SEQ. ID. No. 198); 163-AF12 (SEQ. ID. No.
       196)

 11   D267-AF10 (SEQ. ID. No. 296); D96-AC2 (SEQ. ID. No.
       160); D96-AB6 (SEQ. ID. No. 158); D207-AA5 (SEQ. ID.
       No. 204); D207-AB4 (SEQ. ID. No. 206); D207-AC4 (SEQ.
       ID. No. 208)

 12   D98-AG1 (SEQ. ID. No. 164); D98-AA1 (SEQ. ID. No. 162)

13   D209-AA12 (SEQ. ID. No. 212); D209-AA11; D209-AH10
      (SEQ. ID. No. 214); D209-AH12 (SEQ. ID. No. 232);
      D90a-BB3 (SEQ. ID. No. 154)

14   D129-AD10 (SEQ. ID. No. 188); D104A-AE8 (SEQ. ID. No.
      170)

15   D228-AH8 (SEQ. ID. No. 244); D228-AD7 (SEQ. ID. No.
      241), D250-AC11 (SEQ. ID. No. 258); D247-AH1 (SEQ.
      ID. No. 252)

16   D128-AB7 (SEQ. ID. No. 186) ; D243-AA2 (SEQ. ID. No.
      248); D125-AF11 (SEQ. ID. No. 228)

17   D284-AH5 (SEQ. ID. No. 298); D110-AF12 (SEQ. ID. No.
      176)

18   D221-BB8 (SEQ. ID. No. 234)

19   D222-BH4 (SEQ. ID. No. 236)

20   D134-AE11 (SEQ. ID. No. 230)

21   D109-AH8 (SEQ. ID. No. 174)

22   D136-AF4 (SEQ. ID. No. 278)

23   D237-AD1 (SEQ. ID. No. 226)

24   D112-AA5 (SEQ. ID. No. 178)

25   D283-AC1 (SEQ. ID. No. 272)

26   D110-AF12 (SEQ. ID. No. 176)

EXAMPLE 12: NICOTIANA CYTOCHROME P450 CLONES LACKING ONE OR
MORE OF THE TOBACCO CYTOCHROME P450 SPECIFIC DOMAINS

Four clones had high nucleic acid homology, ranging 90%
to 99% nucleic acid homology, to other tobacco cytochrome
genes reported in Table III. The four clones included D136-
AD5, D138-AD12, D243-AB3 and D250-AC11. However, due to a
nucleotide frameshift these genes did not contain one or
more of three C-terminus cytochrome p450 domains and were

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excluded from identity groups presented in Table III or
Table IV.

5
     The amino acid identity of one clone, D95-AG1, did not
contain the third domain, GXRXC, used to group p450 tobacco
genes in Table III or Table IV. The nucleic acid homology
of this clone had low homology to other tobacco cytochrome
genes. This clone represents a novel and different group of
cytochrome p450 genes in Nicotiana.

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EXAMPLE 13: USE OF NICOTIANA CYTOCHROME P450 FRAGMENTS AND
CLONES IN ALTERED REGULARTION OF TOBACCO PROPERTIES

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     The use of tobacco p450 nucleic acid fragments or whole
genes are useful in identifying and selecting those plants
that have altered tobacco phenotypes or tobacco constituents
and, more importantly, altered metabolites. Transgenic
tobacco plants are generated by a variety of transformation
systems that incorporate nucleic acid fragments or full

20
length genes, selected from those reported herein, in
orientations for either down-regulation, for example anti-
sense orientation, or over-expression for example, sense
orienation. For over-expression to full length genes, any
nucleic acid sequence that encodes the entire or a

25
functional part or amino acide sequence of the full-length
genes described in this invention are desired that are
effective for increasing the expression of a certain enzyme
and thus resulting in phenotypic effect within Nicotiana.
Nicotiana lines that are homozygous lines are obtained

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through a series of backcrossing and assessed for phenotypic
changes including, but not limited to, analysis of

endogenous p450 RNA, transcripts, p450 expressed peptides and concentrations of plant metabolites using techniques commonly avaiable to one having ordinary skill in the art. The changes exhibited in the tobacco plans provide
5   information on the functional role of the selected gene of interest or are of a utility as a preffered Nicotiana plant species.

EXAMPLE 14. IDENTIFICATION OF GENES INDUCED IN ETHYLENE TREATED
10 CONVERTER LINES

High density oligonucleotide array technology, Affymetrix GeneChip® (Affymetrix Inc., Santa Clara, CA) array, was used for quantitative and highly parallel measurements of gene
15 expression. In using this technology, nucleic acid arrays were fabricated by direct synthesis of oligonucleotides on a solid surface. This solid-phase chemistry is able to produce arrays containing hundreds of thousands of oligonucleotide probes packed at extremely high densities on a chip referred
20 to as GeneChip®. Thousands of genes can be simultaneously screened from a single hybridization. Each gene is typically represented by a set of 11-25 pairs of probes depending upon size. The probes are designed to maximize sensitivity, specificity, and reproducibility, allowing consistent
25 discrimination between specific and background signals, and between closely related target sequences.

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Affymetrix GeneChip hybridization experiments involve the following steps: design and production of arrays, preparation of fluorescently labeled target from RNA isolated from the biological specimens, hybridization of the labeled target to the GeneChip, screening the array, and analysis of the scanned image and generation of gene expression profiles.

A. Designing and Custom making Affymetrix GeneChip

A GeneChip CustomExpress Advantage Array was custom made by Affymetrix Inc. (Santa Clara, CA). Chip size was 18 micron and array format was 100-2187 that can accommodate 528 probe sets (11, 628 probes). Except for GenBank derived nucleic acid sequences, all sequences were selected from our previously identified tobacco clones and all probes were custom designed. A total of 400 tobacco genes or fragments were selected to be included on the GeneChip. The sequences of oligonucleotides selected were based on unique regions of the 3' end of the gene. The selected nucleic acid sequences consisted of 56 full length p450 genes and 71 p450 fragments that were cloned from tobacco, described in (patent applications). Other tobacco sequences included270 tobacco ESTs which were generated from suppression subtraction library using Clontech SSH kit(BD Biosciences, Palo Alto, CA). Among these genes, some oligonucleotide sequences were selected from cytochrome P450 genes listed in GenBank. Up to 25 probes were used for each full length gene and 11 probes for each fragment. A reduced number of probes were used for some clones due to the lack of unique, high quality probes. Appropriate control sequences were also included on the GeneChip®.

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The probe Arrays were 25-mer oligonucleotides that were directly synthesized onto a glass wafer by a combination of semiconductor-based photolithography and solid phase chemical synthesis technologies. Each array contained up to 100,000 different oligonucleotide probes. Since oligonucleotide probes are synthesized in known locations on the array, the hybridization patterns and signal intensities can be interpreted in terms of gene identity and relative expression levels by the Affymetrix Microarray Suite® software. Each probe pair consists of a perfect match oligonucleotide and a mismatch oligonucleotide. The perfect match probe has a sequence exactly complimentary to the particular gene and thus measures the expression of the gene. The mismatch probe differs from the perfect match probe by a single base substitution at the center base position, which disturbs the binding of the target gene transcript. The mismatch produces a nonspecific hybridization signal or background signal that was compared to the signal measured for the perfect match oligonucleotide.

B.   Sample preparation

Hybridization experiments were conducted by Genome Explorations, Inc. (Memphis, TN). The RNA samples used in hybridization consisted of six pairs of nonconverter/converter isogenic lines that were induced by ethylene treatments. Samples included one pair of 4407-25/4407-33 non-treated burly tobacco samples, three pairs of ethylene treated 4407-25/4407-

33 samples, one pair of ethylene treated dark tobacco NL Madole/181 and one pair of ethylene treated burly variety PBLB01/178. Ethylene treatment was as described in Example 1.

5   Total RNA was extracted from above mentioned ethylene treated and non-treated leaves using a modified acid phenol and chloroform extraction protocol. Protocol was modified to use one gram of tissue that was ground and subsequently vortexed in 5 ml of extraction buffer (100 mM Tris-HCl, pH
10   8.5; 200 mM NaCl; 10mM EDTA; 0.5% SDS) to which 5 ml phenol (pH5.5) and 5 ml chloroform was added. The extracted sample was centrifuged and the supernatant was saved. This extraction step was repeated 2-3 more times until the supernatant appeared clear. Approximately 5 ml of chloroform
15   was added to remove trace amounts of phenol. RNA was precipitated from the combined supernatant fractions by adding a 3-fold volume of ETOH and 1/10 volume of 3M NaOAc (pH5.2) and storing at -20ºC for 1 hour. After transferring to a Corex glass container the RNA fraction was centrifuged at
20   9,000 RPM for 45 minutes at 4ºC. The pellet was washed with 70% ethanol and spun for 5 minutes at 9,000 RPM at 4ºC. After drying the pellet, the pelleted RNA was dissolved in 0.5 ml RNase free water. The pelleted RNA was dissolved in 0.5 ml RNase free water. The quality and quantity of total RNA was
25   analyzed by denatured formaldehyde gel and spectrophotometer, respectively. The total RNA samples with 3-5µg/ul were sent to Genome explorations, inc. to do the hybridization.

C. Hybridization, detection and data output

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The preparation of labeled cRNA material was performed as follows. First and second strand cDNA were synthesized from 5-15 µg of total RNA using the SuperScript Double-Stranded cDNA Synthesis Kit (Gibco Life Technologies) and oligo-dT24-T7 (5'-GGC CAG TGA ATT GTA ATA CGA CTC ACT ATA GGG AGG CGG-3') primer according to the manufacturer's instructions.

The cRNA was concurrently synthesized and labeled with biotinylated UTP and CTP by in vitro transcription using the T7 promoter coupled double stranded cDNA as template and the T7 RNA Transcript Labeling Kit (ENZO Diagnostics Inc.). Briefly, double stranded cDNA synthesized from the previous steps were washed twice with 70% ethanol and resuspended in 22 µl Rnase-free H2O. The cDNA was incubated with 4 µl of 10X each Reaction Buffer, Biotin Labeled Ribonucleotides, DTT, Rnase Inhibitor Mix and 2 µl 20X T7 RNA Polymerase for 5 hr at 37ºC. The labeled cRNA was separated from unincorporated ribonucleotides by passing through a CHROMA SPIN-100 column (Clontech) and precipitated at -20ºC for 1 hr to overnight.

Oligonucleotide array hybridization and analysis were performed as follows. The cRNA pellet was resuspended in 10 µl Rnase-free H2O and 10.0 µg was fragmented by heat and ion-mediated hydrolysis at 95ºC for 35 mins in 200 mM Tris-acetate, pH 8.1, 500 mM KOAc, 150 mM MgOAc. The fragmented cRNA was hybridized for 16hr at 45ºC to HG_U95Av2 oligonucleotide arrays (Affymetrix) containing ~12,500 full length annotated genes together with additional probe sets designed to represent EST sequences. Arrays were washed at 25ºC with 6 X SSPE (0.9M NaCl, 60 mMNaH2PO4, 6 mM EDTA + 0.01% Tween 20) followed by a stringent wash at 50ºC with 100 mM

MES, 0.1M [Na+], 0.01% Tween 20. The arrays were stained with phycoerythrein conjugated streptavidin (Molecular Probes) and the fluorescence intensities were determined using a laser confocal scanner (Hewlett-Packard). The scanned images were analyzed using Microarray software (Affymetrix). Sample loading and variations in staining were standardized by scaling the average of the fluorescent intensities of all genes on an array to constant target intensity (250) for all arrays used. Data Analysis was conducted using Microarray Suite 5.0 (Affymetrix) following user guidelines. The signal intensity for each gene was calculated as the average intensity difference, represented by $[\Sigma(PM - MM)/(number\ of\ probe\ pairs)]$, where PM and MM denote perfect-match and mismatch probes.

D. Data Analysis and results

Twelve sets of hybridizations were successful as evidenced by the Expression Report generated using detection instruments from Genome Explorations. The main parameters on the report included Noise, Scale factor, background, total probe sets, number and percentage of present and absent probe sets, signal intensity of housekeeping controls. The data was subsequently analyzed and presented using software GCOS in combination of other Microsoft software. Signal comparison between treatment pairs was analyzed. Overall data for all respective probes corresponding to genes and fragments of each different treatment including replications were compiled and compiled expression data such as call of the changes and signal log 2 ratio changes were analyzed.

A typical application of GeneChip technology is finding genes that are differentially expressed in different tissues. In the present application, genetic expression variations caused by ethylene treatment were determined for pairs of converter and nonconverter tobacco lines that included a 4407-25/4407-33 burley variety, PBLB01/178 burley variety, and a NL Madole/181 dark variety. These analyses detected only those genes whose expression is significantly altered due to biological variation. These analyses employed the Fold change (signal ratio) as a major criterion to identify induced genes. Other parameters, such as signal intensity, present/absent call, were also taken into consideration.

After analyzing the data for expression differences in converter and nonconverter pairs of samples for approximately 400 genes, the results based on the signal intensities showed that only two genes, D121-AA8 and D120-AH4, had reproducible induction in ethylene treated converter lines versus non-converter lines. To illustrate the differential expression of these genes, the data was represented as follows. As shown in Table V, the signal of a gene in a converter line, for example, burley tobacco variety, 4407-33, was determined as ratio to the signal of a related nonconverter isogenic line, 4407-25. Without ethylene treatment, the ratio of converter to nonconverter signals for all genes approached 1.00. Upon ethylene treatment, two genes, D121-AA8 and D120-AH4, were induced in converter lines relative to non-converter line as determined by three independent analyses using isogenic burley lines. These genes have very high homology to each other, approximately 99.8% or greater nucleic acid sequence homology. As depicted in Table V, their relative hybridization signals

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in converter varieties ranged from approximately 2 to 12 fold higher in converter lines than the signals in their non-converter counterparts. In comparison, two actin-like control clones, internal controls, were found not to be induced in converter lines based on their normalized ratios. In addition, a fragment (D35-BG11), whose sequence in coding region is entirely contained in both D121-AA8 and D120-AH4 genes, was highly induced in the same samples of paired isogenic converter and nonconverter lines. Another isogenic pair of burley tobacco varieties, PBLB01 and 178, was shown to have the same genes, D121-AA8 and D120-AH4, induced in converter samples under ethylene induction. Furthermore, D121-AA8 and D120-AH4 genes were preferentially induced in converter lines of isogenic dark tobacco pairs, NL Madole and 181, demonstrating that ethylene induction of these genes in converter lines was not limited to burley tobacco varieties. In all cases, the D35-BG11 fragment was the most highly induced in converter relative to nonconverter paired lines.

Table V: A Comparison of Clone Induction in Ethylene Treated
Converter and Non-Converter Lines

Clones	No Treatment	Ethylene Treated Burley Exp 1		Ethylene Treated Burley Exp 2		Ethylene Treated Burley Exp 3		Ethylene Treated Dark	
Induced	33:25 Ratio	33:25 Ratio	Et:No Ratio	33:25 Ratio	Et:No Ratio	33:25 Ratio	Et:No Ratio	181:NL Ratio	Et:No Ratio
D121-AA8	1.03	2.20	2.14	13.25	12.90	5.31	5.15	17.06	16.60
D120-AH4	1.44	2.74	1.90	18.33	12.74	4.13	2.87	11.76	8.17
Control									
Actin-Like I	1.18	1.17	0.99	0.88	0.74	0.86	0.73	1.20	1.02
Actin-Like I	1.09	1.23	1.12	0.89	0.81	1.18	0.11	1.02	0.93

EXAMPLE 15:   CLONING RELATD D35-BG11 FULL LENGTH GENES

GeneChip hybridization was based on 3' reverse transcription (cRNA). The probes were synthesized on GeneChip were chosen from the 3' end of the genes (in the downstream 1000 nucleotide region). Therefore, in order to obtain all the possible variations of D121-AA8 and D120-AH4 clones, additional cloning was performed from the tobacco cDNA library using 5' sequences.

The full length genes were cloned from cDNA library constructed from 4407-33 ethylene treated tissue as described in Example 5. The Polymerase Chain Reaction method was used as follows. The reverse primers were designed based on the 3' sequence (including part of untranslated region) the D121-AA8 gene. The primer of D121-p2 5'-AGC AAG ATG ATC TTA GGT TTT AA-3' and D121-R-2 5'-CAA GCA AGA TGA TCT TAG GTT TTA ATA AAG CTC AGG T-3'. The T3 primer (5'CAA TTA ACC CTC ACT AAA GGG 3'), located in upstream of the inserts in the plasmid, was

used as forward primer The generated PCR products were subjected to agarose electrophoresis and the corresponding bands of high molecular weight were excised, purified, cloned and sequenced. The methods for cloning and sequencing were described in Example 4. Nine novel clones were sequenced and identified as D425-AB10, D425-AB11, D425-AC9, D425-AC10, D425-AC11, D425-AG11, D425-AH7, D425-AH11, and D427-AA5. Each of the clones was observed to have 99% or greater nucleic acid sequence homology with clones D121-AA8 and D120-AH4.

EXAMPLE 16: ETHYLENE INDUCTION OF MICROSOMAL NICOTINE DEMETHYLASE IN TOBACCO CONVERTER LINES

Biochemical analyses of demethylase enzymatic activity in microsomal enriched fractions of ethylene treated and non-treated pairs of converter and non-converter tobacco lines was performed as follows.

A.   Preparation of Microsomes

Microsomes were isolated at 4°C. Tobacco leaves were extracted in a buffer consisting of 50 mM N-(2-hydrooxyethyl) piperazine-N'-(2-ethanesulfonic acid) (HEPES), pH 7.5, 3 mM DL-Dithiothreitol (DTT) and Protease Inhibitor Cocktail (Roche) at 1 tablet/50 ml. The crude extract was filtered through four layers of cheesecloth to remove undisrupted tissue, and the filtrate was centrifuged for 20 min at 20,000 x g to remove cellular debris. The supernatant was subjected to ultracentrifugation at 100,000 x g for 60 min and the resultant pellet contained the microsomal fraction. The

microsomal fraction was suspended in the extraction buffer and applied to an ultracentrifugation step where a discontinuous sucrose gradient of 0.5 M sucrose in the extraction buffer was used. The purified microsomes were resuspended in the extraction buffer supplemented with 10% (w/v) glycerol as cryoprotectant. Microsomal preparations were stored in a liquid nitrogen freezer until use.

B.   Protein Concentration Determination

Microsomal proteins were precipitated with 10% Trichloroacetic Acid (TCA) (w/v) in acetone, and the protein concentrations of microsomes were determined using RC DC Protein Assay Kit (BIO-RAD) following the manufacturer's protocol._

3. Nicotine Demethylase Activity Assay

DL-Nicotine (Pyrrolidine-2-^{14}C) was obtained from Moravek Biochemicals and had a specific activity of 54 mCi/mmol. Chlorpromazine (CPZ) and oxidized cytochrome c (cyt. C), both P450 inhibitors, were purchased from Sigma. Reduced form of nicotinamide adenine dinucleotide phosphate (NADPH) is the typical electron donor for cytochrome P450 via the NADPH:cytochrome P450 reductase. NADPH was omitted for control incubation. Routine enzyme assay consisted of microsomal proteins (around 2 mg/ml), 6 mM NADPH, 55 μM ^{14}C labeled nicotine. The concentration of CPZ and Cyt. C, when used, was 1 mM and 100 μM, respectively. The reaction was carried at 25°C for 1 hour and was stopped with addition of 300 μl

methanol to each 25 μl reaction mixture. After spinning, 20 μl of the methanol extract was separated with a reverse-phase High Performance Liquid Chromatography (HPLC) system (Agilent) using an Inertsil ODS-3 3μ (150 x 4.6 mm) column from Varian. The isocratic mobile phase was the mixture of methanol and 50 mM potassium phosphate buffer, pH 6.25, with ratio of 60:40 (v/v) and the flow rate was 1 ml/min. The nornicotine peak, as determined by comparison with authentic non-labeled nornicotine, was collected and subjected to 2900 tri-carb Liquid Scintillation Counter (LSC) (Perkin Elmer) for quantification. The activity of nicotine demethylase is calculated based on the production of ^{14}C labeled nornicotine over 1 hour incubation.

Samples were obtained from pairs of Burley converter (line 4407-33) and non-converter (line 4407-25) tobacco lines that were ethylene treated or not. All untreated samples did not have any detectable microsomal nicotine demethylase activity. In contrast, microsomal samples obtained from ethylene treated converter lines were found to contain significant levels of nicotine demethylase activity. The nicotine demethylase activity was shown to be inhibited by P450 specific inhibitors demonstrating the demethylase activity was consistent to a P450 microsomal derived enzyme. A typical set of enzyme assay results obtained for the burley converter tobacco line is shown in the Table VI. In contrast, sample derived from ethylene treated nonconverter tobacco did not contain any nicotine demethylase activity. These results demonstrated that nicotine demethylase activity was induced upon treatment with ethylene in converter lines but not in the

corresponding isogenic nonconverter line. Similar results
were obtained for an isogenic dark tobacco variety pair, where
microsomal nicotine demethylase activity was induced in
converter lines and not detectable in nonconverter paired
5   lines. Together these experiments demonstrated that
microsomal nicotine demethylase activity is induced upon
ethylene treatment in converter lines while not in paired
isogenic nonconverter lines. Those genes that are P450
derived genes and are preferentially induced in converter
10   lines relative to paired non-converter lines are candidate
genes to encode the nicotine demethylase enzyme.

Table VI: DEMETHYLASE ACTIVITY IN MICROSOMES OF ETHYLENE
INDUCED BURLEY CONVERTER AND NON CONVERTER LINES

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Sample	Microsomes	Microsomes + 1 mM chlor-promazine	Microsomes + with 100 µM cytochrome C	Microsomes - NADPH
Converter	0.6 ± 0.05 pkat / mg	0.01 ± 0.01 pkat / mg	0.03 ± 0.05 pkat / mg	0.03 ± 0.04 pkat / mg
Non-Converter	Not Detected	Not Detected	Not Detected	Not Detected

20

Numerous modifications and variations in practice of the
invention are expected to occur to those skilled in the art upon
consideration of the foregoing detailed description of the
25   invention. Consequently, such modifications and variations are
intended to be included within the scope of the following claims.

WHAT IS CLAIMED IS:

1. An isolated nucleic acid molecule from Nicotiana wherein
    said nucleic acid molecule comprising a nucleic acid
    sequence selected from the group consisting of SEQ. ID. No.
    299 through SEQ. ID. No. 357.

2. A transgenic plant, wherein said transgenic plant comprises
    the nucleic acid molecule of Claim 1.

3. The transgenic plant of Claim 24, wherein said plant is a
    tobacco plant.

4. A method of producing a transgenic plant, wherein said
    method comprises the steps of:
    (i)   operably linking said nucleic acid molecule of any one of
          the Claim 1 with a promoter functional in said plant to
          create a plant transformational vector;
    (ii) transforming said plant with said plant transformational
          vector of step;
    (iii) selecting a plant cell transformed with said transformation
          vector; and
    (iv) regenerating a transformation plant from said transformed
          plant cell.

5. The method of Claim 4, wherein said nucleic acid molecule is
    in an antisense orientation.

6. The method of Claim 4, wherein said nucleic acid molecule is
    in a sense orientation.

7.   The method of Claim 4, wherein said nucleic acid molecule is
      in a RNA interference orientation.

8.   The method of Claim 4, wherein said nucleic acid molecule is
      expressed as a double stranded RNA molecule.

9.   The method of Claim 4, wherein said double stranded RNA
      molecule is about 15 to 25 nucleotides in length.

10.   The method of Claim 4, wherein said transgenic plant is a
      tobacco plant.

11.   A method of selecting a plant containing a nucleic acid
      molecule, wherein said plant is analyzed for the presence of
      nucleic acid sequence selected from the group consisting of
      299 through 357.

12.   The method of selecting a plant of Claim 11, wherein said
      plant is analyzed by DNA hybridization.

13.   The method of selecting a plant of Claim 11, wherein said
      DNA hybridization is Southern blot analysis.

14.   The method of selecting a plant of Claim 11 wherein said DNA
      hybridization is Northern blot analysis.

15.   The method of selecting a plant of Claim 11, wherein said
      plant is analyzed by PCR detection.

16.   The method of Claim 11, wherein said plant is a tobacco
      plant.

17. A method of increasing or decreasing nornicotine levels in a
plant, wherein said method comprises the steps of:

(i) operably linking said nucleic acid molecule of claim 1
with a promoter functional in said plant to create a plant
transformational vector;
(ii) transforming said plant with said plant
transformational vector of step (i);
(iii) selecting a plant cell transformed with said
transformation vector; and
(iv) regenerating a transformation plant from said
transformed plant cell.

18. The method of Claim 17, wherein said nucleic acid
molecule is in an antisense orientation.

19. The method of Claim 17, wherein said nucleic acid
molecule is in a sense orientation.

21. The method of Claim 17, wherein said nucleic acid
molecule is in a RNA interference orientation.

22. The method of Claim 17, wherein said nucleic acid
molecule is expressed as a double stranded RNA molecule.

23. The method of Claim 17, wherein said transgenic plant
is a tobacco plant.

FIG. 1

SEQ ID 1   D58-BG7
```
  1 GCACAACTT GCTATCAACT TGGTCACATC TATGTTGGGT
 61 CATTTGTTGC ATCATTTTAC ATGGGCTCCG GCCCCGGGGG TTAACCCGGA GGATATTGAC
121 TTGGAGGAGA GCCCTGGAAC AGTAACTTAC ATGAAAAATC CAATACAAGC TATTCCAACT
181 CCAAGATTGC CTGCACACTT GTATGGACGT GTGCCAGTGG ATATG**TAA**
```
SEQ ID 2
AQLAINLVTSMLGHLLHHFTWAPAPGVNPEDIDLEESPGTVTYMKNPIQAIPTPRLPAHLYGRVPVDM

FIG. 2

SEQ ID 3   D58-AB1
```
  1 GCACAACT TGCTATCAAC TTGGTCACAT CTATGTTGGG
 61 TCATTTGTTG CATCATTTTA CGTGGGCTCC GCCCCCGGGG GTTAACCCGG AGAATATTGA
121 CTTGGAGGAG AGCCCTGGAA CAGTAACTTA CATGAAAAAT CCAATACAAG CTATTCCTAC
181 TCCAAGATTG CCTGCACACT TGTATGGACG TGTGCCAGTG GATATG**TAA**
```
SEQ ID 4
AQLAINLVTSMLGHLLHHFTWAPPPGVNPENIDLEESPGTVTYMKNPIQAIPTPRLPAHLYGRVPVDM

FIG. 3

SEQ ID 5   D186-AH4
```
  1 ATGAATTAT TCATTGCAAG TGGAACACCT TTCAATTGCT
 61 CATATGATCC AAGGTTTCAG TTTTGCAACT ACGACCAATG AGCCTTTGGA TATGAAACAA
121 GGTGTGGGTT TAACTTTACC AAAGAAGACT GATGTTGAAG TGCTAATTAC ACCTCGCCTT
181 CCTCCTACGC TTTATCAATA T**TAA**
```
SEQ ID 6
MNYSLQVEHLSIAHMIQGFSFATTTNEPLDMKQGVGLTLPKKTDVEVLITPRLPPTLYQY

FIG. 4

SEQ ID 7   D58-BE4
```
  1 GCACAACTT GCTATCAACT TGGTCACATC TATGTTGGGT
 61 CATTTGTTCA TCATTTTACA TGGGCTCCGG CCCCGGGGGT TAACCCGGAG GATATTGACT
121 TGGAGGAGAG CCCTGGAACA GTAACTTACA **TGA**
```
SEQ ID 8
AQLAINLVTSMLGHLFIILHGLRPRGLTRRILTWRRALEQ

FIG. 5

SEQ ID 9   D56-AH7
```
  1 GAAGGATTG GCTGTTCGAA TGGTTGCCTT GTCATTGGGA
 61 TGTATTATTC AATGTTTTGA TTGGCAACGA ATCGGCGAAG AATTGGTTGA TATGACTGAA
121 GGAACTGGAC TTACTTTGCC TAAAGCTCAA CCTTTGGTGG CCAAGTGTAG CCCACGACCT
181 AAAATGGCTA ATCTTCTCTC TCAGATT**TGA**
```
SEQ ID 10
EGLAVRMVALSLGCIIQCFDWQRIGEELVDMTEGTGLTLPKAQPLVAKCSPRPKMANLLSQI

SEQ ID 11   **D13a-5**

```
  1 GAAGGATTG GCTATTCGAA TGGTTGCATT GTCATTGGGA
 61 TGTATTATTC AATGCTTTGA TTGGCAACGA CTTGGGGAAG GATTGGTTGA TAAGACTGAA
121 GGAACTGGAC TTACTTTGCC TAAAGCTCAA CCTTTAGTGG CCAAGTGTAG CCCACGACCT
181 ATAATGGCTA ATCTTCTTTC TCAGATTTGA
```

SEQ ID 12

EGLAIRMVALSLGCIIQCFDWQRLGEGLVDKTEGTGLTLPKAQPLVAKCSPRPIMANLLSQI

FIG. 7

SEQ ID 13   **D56-AG10**

```
  1 ATAGGTTTT GCGACTTTAG TGACACATCT GACTTTTGGT
 61 CGCTTGCTTC AAGGTTTTGA TTTTAGTAAG CCATCAAACA CGCCAATTGA CATGACAGAA
121 GGCGTAGGCG TTACTTTGCC TAAGGTTAAT CAAGTTGAAG TTCTAATTAC CCCTCGTTTA
181 CCTTCTAAGC TTTATTTATT TTGA
```

SEQ ID 14

IGFATLVTHLTFGRLLQGFDFSKPSNTPIDMTEGVGVTLPKVNQVEVLITPRLPSKLYLF

FIG. 8

SEQ ID 15   **D35-33**

```
  1 ATAGGCTTT GCGACTTTAG TGACACATCT GACTTTTGGT
 61 CGCTTGCTTC AAGGTTTTGA TTTTAGTAAG CCATCAAACA CGCCAATTGA CATGACAGAA
121 GGCGTAGGCG TTACTTTGCC TAAGGTTAAT CAAGTTGAAG TTCTAATTAC CCCTCGTTTA
181 CCTTCTAAGC TTTATTTAT
```

SEQ ID 16

IGFATLVTHLTFGRLLQGFDFSKPSNTPIDMTEGVGVTLPKVNQVEVLITPRLPSKLYL

FIG. 9

SEQ ID 17   **D34-62**

```
  1 ATAAATTTT GCGACTTTAG TGACACATCT GACTTTTGGT
 61 CGCTTGCTTC AAGGTTTTGA TTTTAGTACG CCATCAAACA CGCCAATAGA CATGACAGAA
121 GGCGTAGGCG TTACTTTGCC TAAGGTAAAT CAAGTGGAAG TTCTAATTAG CCCTCGTTTA
181 CCTTCTAAGC TTTATGTATT CTGA
```

SEQ ID 18

INFATLVTHLTFGRLLQGFDFSTPSNTPIDMTEGVGVTLPKVNQVEVLISPRLPSKLYVF

FIG. 10

SEQ ID 19   **D56AA7**

```
  1 ATTATACTT GCATTGCCAA TTCTTGGCAT CACTTTGGGA
 61 CGTTTGGTTC AGAACTTTGA GCTGTTGCCT CCTCCAGGCC AGTCGAAGCT CGACACCACA
121 GAGAAAGGTG ACAGTTCAG TCTCCACATT TTGAAGCATT CCACCATTGT GTTGAAACCA
181 AGGTCTTTCT GA
```

SEQ ID 20

IILALPILGITLGRLVQNFELLPPPGQSKLDTTEKGGQFSLHILKHSTIVLKPRSF

SEQ ID 21   D56-AE1
    1 ATTATACTT GCATTGCCAA TTCTTGGCAT TACTTTGGGA
   61 CGTTTGGTTC AGAACTTTGA GCTGTTGCCT CCTCCAGGCC AGTCGAAGCT CGACACCACA
  121 GAGAAAGGTG GACAGTTCAG TCTCCATATT TTGAAGCATT CCACCATTGT GTTGAAACCA
  181 AGGTCTTGCT **GA**
SEQ ID 22
IILALPILGITLGRLVQNFELLPPPGQSKLDTTEKGGQFSLHILKHSTIVLKPRSC

FIG. 12

SEQ ID 23   D35-BB7
    1 TATTGCACTT GGGGTTGCAT CAATGGAACT TGCATTGTCA
   61 AATCTTCTTT ATGCATTTGA TTGGGAGTTA CCTTTTGGAA TGAAAAAAGA AGACATTGAC
  121 ACAAACGCCA GGCCTGGAAT TACCATGCAT AAGAAAAACG AACTTTATCT TATCCCTAAA
  181 AATTATCTAT **AG**
SEQ ID 24
IALGVASMELALSNLLYAFDWELPFGMKKEDIDTNARPGITMHKKNELYLIPKNYLPSKLYLF

FIG. 13

SEQ ID 25   D177-BA7
    1 ATTGCACTTG GGGTTGCATC CATGGAACTT
  121 GCTTTGTCAA ATCTTCTTTA TGCATTTGAT TGGGAGTTAC CTTACGGAGT GAAAAAAGAA
  181 AACATTGACA CAAATGTCAG GCCTGGAATT ACCATGCATA AGAAAAACGA ACTTTGCCTT
  241 ATCCCTAGAA ATTATCTA**TA G**
SEQ ID 26
IALGVASMELALSNLLYAFDWELPYGVKKENIDTNVRPGITMHKKNELCLIPRNYL

FIG. 14

SEQ ID 27   D56A-AB6
    1 GGTATTGCAC TTGGGGTTGC ATCCATGGAA CTTGCTTTGT CAAATCTTCT TTATGCATTT
   61 GATTGGGAGT TGCCTTATGG AGTGAAAAAA GAAGACATCG ACACAAACGT TAGGCCTGGA
  121 ATTGCCATGC ACAAGAAAAA CGAACTTTGC CTTGTCCCAA AAAATTATTT **ATAA**
SEQ ID 28
IALGVASMELALSNLLYAFDWELPYGVKKEDIDTNVRPGIAMHKKNELCLVPKNYL

FIG. 15

SEQ ID 29   D144-AE2
    1 ATT GCACTTGGGG TTGCATCCAT GGAACTTGCT
   61 TTGTCAAATC TTCTTTATGC ATTTGATTGG GAGTTGCCTT ATGGAGTGAA AAAAGAAGAC
  121 ATCGACACAA ACGTTAGGCC TGGAATTGCC ATGCACAAGA AAAACGAACT TTGCCTTGTC
  181 CCAAAAAAAT TATTTATAAA TTATATTGGG ACGTGGATCT CATGC**TAG**
SEQ ID 30
IALGVASMELALSNLLYAFDWELPYGVKKEDIDTNVRPGIAMHKKNELCLVPKKLFINYIGTWISC

SEQ ID 31   **D56-AG11**
```
  1 ATTTCGTTT GGTTTAGCTA ATGCTTATTT GCCATTGGCT
 61 CAATTACTTT ATCACTTTGA TTGGGAACTC CCCACTGGAA TCAAACCAAG CGACTTGGAC
121 TTGACTGAGT TGGTTGGAGT AACTGCCGCT AGAAAAGTG ACCTTTACTT GGTTGCGACT
181 CCTTATCAAC CTCCTCAAAA CTGA
```
SEQ ID 32
ISFGLANAYLPLAQLLYHFDWELPTGIKPSDLDLTELVGVTAARKSDLYLVATPYQPPQN

FIG. 17

SEQ ID 33   **D179-AA1**
```
  1 ATTTCGTTT GGCTTAGCTA ATGCTTATTT GCCATTGGCT
 61 CAATTACTAT ATCACTTCGA TTGGAAACTC CCTGCTGGAA TCGAACCAAG CGACTTGGAC
121 TTGACTGAGT TGGTTGGAGT AACTGCCGCT AGAAAAGTG ACCTTTACTT GGTTGCGACT
181 CCTTATCAAC CTCCTCAAAA GTGA
```
SEQ ID 34
ISFGLANAYLPLAQLLYHFDWKLPAGIEPSDLDLTELVGVTAARKSDLYLVATPYQPPQK

FIG. 18

SEQ ID 35   **D56-AC7**
```
  1 ATGCTATTT GGTTTAGCTA ATGTTGGACA ACCTTTAGCT
 61 CAGTTACTTT ATCACTTCGA TTGGAAACTC CCTAATGGAC AAAGTCATGA GAATTTCGAC
121 ATGACTGAGT CACCTGGAAT TTCTGCTACA AGAAAGGATG ATCTTGTTTT GATTGCCACT
181 CCTTATGATT CTTATTAATTCCAGTCTA TATCATCTAT ATGTACTCAA TAATTGTATG
361 GGA
```
SEQ ID 36
MLFGLANVGQPLAQLLYHFDWKLPNGQSHENFDMTESPGISATRKDDLVLIATPYDSY

FIG. 19

SEQ ID 37   **D144-AD1**
```
  1 ATGC TATTTGGTTT AGCTAATGTT
 61 GGACAACCTT TAGCTCAGTT ACTTTATCAC TTCGATTGGA AACTCCCTAA TGGACAAACT
121 CACCAAAATT TCGACATGAC TGAGTCACCT GGAATTTCTG CTACAAGAAA GGATGATCTT
181 ATTTTGATTG CCACTCCTGC TCATTCTTGA
```
SEQ ID 38
MLFGLANVGQPLAQLLYHFDWKLPNGQTHQNFDMTESPGISATRKDDLILIATPAHS

FIG. 20

SEQ ID 39   **D144-AB5**
```
  1 TTAT TATTCGGTTT AGTTAATGTA
 61 GGACATCCTT TAGCTCAATT GCTTTATCAC TTCGATTGGA AGACTCTTCC TGGGATAAGT
121 TCAGATAGTT TCGACATGAC TGAAACAGAT GGAGTAACTG CCGGAAGAAA GGATGATCTT
181 TGTTTAATTG CTACTCCTTT TGGTCTCAAT TAA
```
SEQ ID 40
LLFGLVNVGHPLAQLLYHFDWKTLPGISSDSFDMTETDGVTAGRKDDLCLIATPFGLN

FIG. 21

SEQ ID 41   D181-AB5
```
  1 A TGTCGTTTGG TTTAGTTAAC ACTGGGCATC CTTTAGCTCA
 61 GTTGCTCTAT TTCTTTGACT GGAAATTCCC TCATAAGGTT AATGCAGCTG ATTTTCACAC
121 TACTGAAACA AGTAGAGTTT TTGCAGCAAG CAAAGATGAC CTCTACTTGA TTCCAACAAA
181 TCACATGGAG CAAGAG**TAG**
```
SEQ ID 42
MSFGLVNTGHPLAQLLYFFDWKFPHKVNAADFHTTETSRVFAASKDDLYLIPTNHMEQE

FIG. 22

SEQ ID 43   D73-AC9
```
  1 AT GTCGTTTGGT TTAGTTAACA CAGGGCATCC TTTAGCCCAG
121 TTGCTCTATT GCTTTGACTG GAAACTCCCT GACAAGGTTA ATGCAAATGA TTTTCGCACT
181 ACTGAAACAA GTAGAGTTTT TGCAGCAAGC AAAGATGACC TCTACTTGAT TCCCACAAAT
241 CACAGGGAGC AAGAA**TAG**
```
SEQ ID 44
MSFGLVNTGHPLAQLLYCFDWKLPDKVNANDFRTTETSRVFAASKDDLYLIPTNHREQE

FIG. 23

SEQ ID 45   D56-AC12
```
  1 ATGCAATTT GGTTTGGCTC TTGTTACTCT GCCATTGGCT
 61 CATTTGCTTC ACAATTTTGA TTGGAAACTT CCCGAAGGAA TTAATGCAAG GGATTTGGAC
121 ATGACAGAGG CAAATGGGAT ATCTGCTAGA AGAGAAAAAG ATCTTTACTT GATTGCTACT
181 CCTTATGTAT CACCTCTTGA TT**AA**
```
SEQ ID 46
MQFGLALVTLPLAHLLHNFDWKLPEGINARDLDMTEANGISARREKDLYLIATPYVSPLD

FIG. 24

SEQ ID 47   D58-AB9
```
  1 ATGACTTAT GCATTGCAAG TGGAACACCT AACAATGGCA
 61 CATTTGATCC AGGGTTTCAA TTACAGAACT CCAACTGATG AGCCCTTGGA TATGAAAGAA
121 GGTGCAGGCA TAACTATACG TAAGGTAAAT CCTGTGAAAG TGATAATTAC GCCTCGCTTG
181 GCACCTGAGC TTTAT**TAA**
```
SEQ ID 48
MTYALQVEHLTMAHLIQGFNYRTPTDEPLDMKEGAGITIRKVNPVKVIITPRLAPELY

FIG. 25

SEQ ID 49   D56-AG9
```
  1 ATGACTTAT GCATTGCAAG TGGAACACCT AACAATGGCA
 61 CATTTAATCC AGGGTTTCAA TTACAAAACT CCAAATGACG AGGCCTTGGA TATGAAGGAA
121 GGTGCAGGCA TAACTATACG TAAGGTAAAT CCTGTGGAAC TGATAATAGC GCCTCGCCTG
181 GCACCTGAGC TTTAT**TAA**
```
SEQ ID 50
MTYALQVEHLTMAHLIQGFNYKTPNDEALDMKEGAGITIRKVNPVELIIAPRLAPELY

SEQ ID 51   D56-AG6
```
  1 ATGACTTAT GCATTGCAAG TGGAACACCT AACAATGGCA
 61 CATTTAATCC AGGGTTTCAA TTACAAAACT CCAAATGACG AGGCCTTGGA TATGAAGGAA
121 GGTGCAGGCA TAACAATACG TAAGGTAAAT CCAGTGGAAT TGATAATAAC GCCTCGCTTG
181 GCACCTGAGC TTTACTAA
```
SEQ ID 52
MTYALQVEHLTMAHLIQGFNYKTPNDEALDMKEGAGITIRKVNPVELIITPRLAPELY

FIG. 27

SEQ ID 53   D35-BG11
```
  1 ATGACTTAT GCATTGCAAG TGGAACACTT AACAATGGCA
 61 CATTTGATCC AAGGTTTCAA TTACAGAACT CCAAATGACG AGCCCTTGGA TATGAAGGAA
121 GGTGCAGGCA TAACTATACG TAAGGTAAAT CCTGTGGAAC TGATAATAGC GCCTCGCCTG
181 GCACCTGAGC TTTATTAA
```
SEQ ID 54
MTYALQVEHLTMAHLIQGFNYRTPNDEPLDMKEGAGITIRKVNPVELIIAPRLAPELY

FIG. 28

SEQ ID 55   D35-42
```
  1 ATGACTTAT GCATTGCAAG TGGAACACTT AACAATGGCA
 61 CATTTGATCC AAGGTTTCAA TTACAGAACT CCAAATGACG AGCCCTTGGA TATGAAGGAA
121 GGTGCAGGCA TAACTATACG TAAGGTAAAT CCTGTGGAAC TGATAATAGC GCCCCTGGCA
181 CCTGAGCTTT ATTAA
```
SEQ ID 56
MTYALQVEHLTMAHLIQGFNYRTPNDEPLDMKEGAGITIRKVNPVELIIAPLAPELY

FIG. 29

SEQ ID 57   D35-BA3
```
  1 ATGACTTAT GCATTGCAAG TGGAACACTT AACAATGGCA
 61 CATTTGATCC AAGGTTTCAA TTACAGAACT CCAAATGACG AGCCCTTGGA TATGAAGGAA
121 GGTGCAGGCA TAACTATACG TAAGGTAAAT CCTGCGGAAC TGATAATAGC GCCTCGCCTG
181 GCACCTGAGC TTTATTAA
```
SEQ ID 58
MTYALQVEHLTMAHLIQGFNYRTPNDEPLDMKEGAGITIRKVNPAELIIAPRLAPELY

FIG. 30

SEQ ID 59   D34-57
```
  1 ATGACTTAT GCATTACAAG TGGAACACCT AACAATAGCA
 61 CATTTGATCC AGGGTTTCAA TTACAAAACT CCAAATGACG AGCCCTTGGA TATGAAGGAA
121 GGTGCAGGAT TAACCATACG TAAAGTAAAT CCTGTAGAAG TGACAACTAC GGCTCGCCTG
181 GCACCTGAGC TTTATTAA
```
SEQ ID 60
MTYALQVEHLTIAHLIQGFNYKTPNDEPLDMKEGAGLTIRKVNPVEVTTTARLAPELY

SEQ ID 61   D34-52
```
  1 ATGACTTAT GCATTACAAG TGGAACACCT AACAATAGCA
 61 CATTTGATCC AGGGTTTCAA TTACAAAACT CCAAATGACG AGCCCCTTGGA TATGAAGGAA
121 GGTGCAGGAT TAACTATACG TAAAGTAAAT CCTGTAGAAG TGACAATTAC GGCTCGCCTG
181 GCACCTGAGC TTTAT**TAA**
```
SEQ ID 62
MTYALQVEHLTIAHLIQGFNYKTPNDEPLDMKEGAGLTIRKVNPVEVTITARLAPELY

FIG. 32

SEQ ID 63   D34-25
```
  1 ATGACTTAT GCATTACAAG TGGAACACCT AACAATAGCA
 61 CATTTGATCC AGGGTTTCAA TTACAAAACT CCAAATGACG AGCCCCTGGA TATGAAGGAA
121 GGTGCAGGAT TAACTATACG TAAAGTAAAT CCTGTAGAAG TGACAATTAC GGCTCGCCTG
181 GCACCTGAGC TTTAT**TAA**
```
SEQ ID 64
MTYALQVEHLTIAHLIQGFNYKTPNDEPLDMKEGAGLTIRKVNPVEVTITARLAPELY

FIG. 33

SEQ ID 65   D56AD10
```
  1 TATAGCCTT GGACTTAAGG TTATCCGAGT AACATTAGCC
 61 AACATGTTGC ATGGATTCAA CTGGAAATTA CCTGAAGGTA TGAAGCCAGA AGATATAAGT
121 GTGGAAGAAC ATTATGGGCT CACTACACAT CCTAAGTTTC CTGTTCCTGT GATCTTGGAA
181 TCTAGACTTT CTTCAGATCT CTATTCCCCC ATCACT**TAA**
```
SEQ ID 66
YSLGLKVIRVTLANMLHGFNWKLPEGMKPEDISVEEHYGLTTHPKFPVPVILESRLSSDLYSPIT

FIG. 34

SEQ ID 67   D56-AA11
```
  1 ATACAGTCTT GGGATTCGTA TAATTAGGGC AACTTTAGCT
 61 AACTTGTTGC ATGGATTCAA CTGGAGATTG CCTAATGGTA TGAGTCCAGA AGACATTAGC
121 ATGGAAGAGA TTTATGGGCT AATTACACAC CCCAAAGTCG CACTTGACGT GATGATGGAG
181 CCTCGACTTC CCAACCATCT TTACAAA**TAG**
```
SEQ ID 68
YSLGIRIIRATLANLLHGFNWRLPNGMSPEDISMEEIYGLITHPKVALDVMMEPRLPNHLYK

FIG. 35

SEQ ID 69   D177-BD5
```
  1 ATTAATTTTT CAATACCACT TGTTGAGCTT
121 GCACTTGCTA ATCTATTGTT TCATTATAAT TGGTCACTTC CTGAAGGGAT GCTAGCTAAG
181 GATGTTGATA TGGAAGAAGC TTTGGGGATT ACCATGCACA AGAAATCTCC CCTTTGCTTA
241 GTAGCTTCTC ATTATACTTG **TTGA**
```
SEQ ID 70
INFSIPLVELALANLLFHYNWSLPEGMLAKDVDMEEALGITMHKKSPLCLVASHYTC

SEQ ID 71   D56A-AG10
        1 ATGCAACTTG GGCTTTATGC ATTGGAAATG GCTGTGGCCC ATCTTCTTCA TTGTTTTACT
       61 TGGGAATTGC CAGATGGTAT GAAACCAAGT GAGCTTAAAA TGGATGATAT TTTTGGACTC
      121 ACTGCTCCAA AAGCTAATCG ACTCGTGGCT GTGCCTACTC CACGTTTGTT GTGTCCCCTT
      181 TATTAATTGA
SEQ ID 72
MQLGLYALEMAVAHLLHCFTWELPDGMKPSELKMDDIFGLTAPKANRLVAVPTPRLLCPLY

FIG. 37

SEQ ID 73   58-BC5
        1 ATGCAACTT GGGCTTTATG CATTAGAAAT GGCAGTGGCC
       61 CATCTTCTTC TTTGCTTTAC TTGGGAATTG CCAGATGGTA TGAAACCAAG TGAGCTTAAA
      121 ATGGATGATA TTTTTGGACT CACTGCTCCA AGAGCTAATC GACTCGTGGC TGTGCCTAGT
      181 CCACGTTTGT TGTGCCCACT TTATTAA
SEQ ID 74
MQLGLYALEMAVAHLLLCFTWELPDGMKPSELKMDDIFGLTAPRANRLVAVPSPRLLCPLY

FIG. 38

SEQ ID 75   D58-AD12
        1 ATGCAACTT GGGCTTTATG CATTGGAAAT GGCTGTGGCC
       61 CATCTTCTTC ATTGTTTTAC TTGGGAATTG CCAGATGGTA TGAAACCAAG TGAGCTTAAA
      121 ATGGATGATA TTTTTGGACT CACTGCTCCA AGAGCTAATC GACTCGTGGC TGTGCCTACT
      181 CCACGTTTGT TGTGTCCCCT TTATTAA
SEQ ID 76
MQLGLYALEMAVAHLLHCFTWELPDGMKPSELKMDDIFGLTAPRANRLVAVPTPRLLCPLY

FIG. 39

SEQ ID 77   D56-AC11
        1 ATGCTTTGG AGTGCGAGTA TAGTGCGCGT CAGCTACCTA
       61 ACTTGTATTT ATAGATTCCA AGTATATGCT GGGTCTGTGT TCAGAGTAGC ATGA
SEQ ID 78
MLWSASIVRVSYLTCIYRFQVYAGSVFRVA

FIG. 40

SEQ ID 79   D35-39
        1 ATGCTTTGG AGTGCGAGTA TAGTGCGCGT CAGCTACCTA
       61 ACTTGTATTT ATAGATTCCA AGTATATGCT GGGTCTGTGT TCAGAGTAGC ATGA
SEQ ID 80
MLWSASIVRVSYLTCIYRFQVYAGSVFRVA

SEQ ID 81   D58-BH4

          1 ATGCTTTGG AGTGCGAGTA TAGTGCGCGT CAGCTACCTA
         61 ACCTGTATTT ATAGATTCCA AGTATATGCT GGGTCTGTGT TCAGAGTAGC **ATGA**
SEQ ID 82
MLWSASIVRVSYLTCIYRFQVYAGSVFRVA

FIG. 42

SEQ ID 83   D177-BD7

          1 ATTAATTTTT CAATACCACT TGTTGAGCTT GCACTTGCTA ATCTATTGTT TCATTATAAT
         61 TGGTCACTTC CTGAGGGGAT GCTACCTAAG GATGTTGATA TGGAAGAAGC TTTGGGGATT
        121 ACCATGCACA AGAAATCTCC CCTTTGCTTA GTAGCTTCTC ATTATAACTT GTTG**TGA**
SEQ ID 84
INFSIPLVELALANLLFHYNWSLPEGMLPKDVDMEEALGITMHKKSPLCLVASHYNLL

FIG. 43

SEQ ID 85
                 D176-BF2
          1 AT ATCATTTGGT TTGGCTAATG TTTATTTGCC ACTAGCTCAA
        121 TTGTTATATC ATTTTGATTG GAAACTCCCT ACTGGAATCA ATTCAAGTGA CTTGGACATG
        181 ACTGAGTCGT CAGGAGTAAC TTGTGCTAGA AAGAGTGATT TATACTTGAC TGCTACTCCA
        241 TATCAACTTT CTCAAGAG**TG A**
SEQ ID 86
GISFGLANVYLPLAQLLYHFDWKLPTGINSSDLDMTESSGVTCARKSDLYLTATPYQLSQE

FIG. 44

SEQ ID 87   D56-AD6
          1 ATGCTTTGG AGTGCGAGTA TAGTGCGCGT CAGCTACCTA
         61 ACTTGTATTT ATAGATTCCA AGTATATGCT GGGTCTGTGT CCAGAGTAGC **ATGA**
SEQ ID 88
MLWSASIVRVSYLTCIYRFQVYAGSVSRVA

FIG. 45

SEQ ID 89   D73A-AD6
          1 CT GAATTTTGCA ATGTTAGAGG CAAAAATGGC ACTTGCATTG
        121 ATTCTACAAC ACTATGCTTT TGAGCTCTCT CCATCTTATG CACATGCTCC TCATACAATT
        181 ATCACTCTGC AACCTCAACA TGGTGCTCCT TTGATTTTGC GCAAGCTG**TA G**
SEQ ID 90
LNFAMLEAKMALALILQHYAFELSPSYAHAPHTIITLQPQHGAPLILRKL

SEQ ID 91   D70A-BA11
```
  1 CT GAATTTTGCA ATGTTAGAGG CAAAAATGGC ACTTGCATTG
121 ATTCTACAAC ACTATGCTTT TGAGCTCTCT CCATCTTATG CACACGCTCC TCATACAATT
181 ATCACTCTGC AACCTCAACA TGGTGCTCCT TTGATTTGC GCAAGCTG**TA G**
```
SEQ ID 92
LNFAMLEAKMALALILQHYAFELSPSYAHAPHTIITLQPQHGAPLILRKL

FIG. 47

SEQ ID 93   D70A-BB5
```
  1 AA TAATTTTGCA ATGTTGGAAA CTAAGATTGC CTTAGCAATG
121 ATCCTACAGC GTTTTGCTTT CGAGCTTTCT CCATCTTACG CTCATGCACC TACTTATGTC
181 GTCACTCTTC GACCTCAGTG TGGTGCTCAC TTAATCTTGC AAAAATTA**TA G**GTCCTTAAT
241 CTGGATTTCC CATTATTGAG TAGTGCCTAA TAAATCTTCT CTATCACTAT TTTTCCATCT
301 TTCA
```
SEQ ID 94
NNFAMLETKIALAMILQRFAFELSPSYAHAPTYVVTLRPQCGAHLILQKL

FIG. 48

SEQ ID 95   D70A-AB5
```
  1 AGCGAAGGGG TGGCAAAGGC AACAAAGGGG AAAATGACAT ATTTTCCATT TGGTGCAGGA
 61 CCGCGAAAA**T GCATTGGG**CA AAACTTCGCG ATTTTGGAAG CAAAAATGGC TATAGCTATG
121 ATTCTACAAC GCTTCTCCTT CGAGCTCTCC CCATCTTATA CACACTCTCC ATACACTGTG
181 GTCACTTTGA AACCCAAATA TGGTGCTCCC CTAATAATGC ACAGGCTG**TA G**TCCTGTGAG
241 AAATATGCTAT CCGAGGAATT CAGTTCCT
```
SEQ ID 96
QNFAILEAKMAIAMILQRFSFELSPSYTHSPYTVVTLKPKYGAPLIMHRL

FIG. 49

SEQ ID 97   D70A-AA8
```
  1 AGCGAAGGGG TGGCAAAGGC AACAAAGGGG AAAATGACAT ATTTTCCATT TGGTGCAGGA
 61 CCGCGAAAA**T GCATTGGG**CA AAACTTCGCG ATTTTGGAAG CAAAAATGGC TATAGCTATG
121 ATTCTACAAC GCTTCTCCTT CGAGCTCTCT CCATCTTATA CACACTCTCC ATACACTGTG
181 GTCACTTTGA AACCCAAATA TGGTGCTCCC CTAATAATGC ACAGGCTG**TA G**TCCTGT
```
SEQ ID 98
QNFAILEAKMAIAMILQRFSFELSPSYTHSPYTVVTLKPKYGAPLIMHRL

FIG. 50

SEQ ID 99   D70A-AB8
```
  1 C AAAATTTTGC CATGTTAGAA GCAAGATGG CTCTGTCTAT GATCCTGCAA
121 CGCTTCTCTT TTGAACTGTC TCCGTCTTAT GCACATGCCC CTCAGTCCAT ATTAACCGT
181 CAGCCACAAT ATGGTGCTCC ACTTATTTTC CACAAGCTA**T AA**
```
SEQ ID 100
QNFAMLEAKMALSMILQRFSFELSPSYAHAPQSILTVQPQYGAPLIFHKL

SEQ ID 101   **D70A-BH2**

```
  1 AT AAACTTTGCA ATGACAGAAG CGAAGATGGC TATGGCTATG
121 ATTCTGCAAC GCTTCTCCTT TGAGCTATCT CCATCTTACA CACATGCTCC ACAGTCTGTA
181 ATAACTATGC AACCCCAATA TGGTGCTCCT CTTATATTGC ACAAATTG**TA** **A**
```

SEQ ID 102

INFAMTEAKMAMAMILQRFSFELSPSYTHAPQSVITMQPQYGAPLILHKL

FIG. 52

SEQ ID 103   **D70A-AA4**

```
  1 AT AAACTTTGCA ATGGCAGAAG CGAAGATGGC TATGGCTATG
121 ATTCTGCAAC GCTTCTCCTT TGAGCTATCT CCATCTTACA CACATGCTCC ACAGTCTGTA
181 ATAACTATGC AACCCCAATA TGGTGCTCCT CTTATATTGC ACAAATTG**TA** **A**
```

SEQ ID 104

INFAMAEAKMAMAMILQRFSFELSPSYTHAPQSVITMQPQYGAPLILHKL

FIG. 53

SEQ ID 105   **D70A-BA1**

```
  1 CA AAACTTTGCA ATGATGGAAG CAAAAATGGC AGTAGCTATG
121 ATACTACAAA AATTTTCCTT TGAACTATCC CCTTCTTATA CACATGCTCC ATTTGCAATT
181 GTGACTATTC ATCCTCAGTA TGGTGCTCCT CTGCTTATGC GCAGACTT**TA** **A**
```

SEQ ID 106

QNFAMMEAKMAVAMILQKFSFELSPSYTHAPFAIVTIHPQYGAPLLMRRL

FIG. 54

SEQ ID 107   **D70A-BA9**

```
  1 CA AAACTTTGCA ATGATGGAAG CAAAAATGGC AGTAGCTATG
121 ATACTACATA AATTTTCCTT TGAACTATCC CCTTCTTATA CACATGCTCC ATTTGCAATT
181 GTGACTATTC ATCCTCAGTA TGGTGCTCCT CTGCTTATGC GCAGACTT**TA** **A**
```

SEQ ID 108

QNFAMMEAKMAVAMILHKFSFELPSYTHAPFAIVTIHPQYGAPLLMRRL

FIG. 55

SEQ ID 109   **D70A-BD4**

```
  1 CA AAATTTTGCT ATGTTAGAGG CTAAAATGGC AATGGCTATG
121 ATTCTGAAAA CCTATGCATT TGAACTCTCT CCATCTTATG CTCATGCTCC TCATCCACTA
181 CTACTTCAAC CTCAATATGG TGCTCAATTA ATTTTGTACA AGTTG**TAG**
```

SEQ ID 110

QNFAMLEAKMAMAMILKTYAFELSPSYAHAPHPLLLQPQYGAQLILYKL

SEQ ID 111   **D181-AC5**
```
  1 TATAGCATGG GGCTCAAGGC GATTCAAGCT AGCTTAGCTA
 61 ATCTTCTACA TGGATTTAAC TGGTCATTGC CTGATAATAT GACTCCTGAG GACCTCAACA
121 TGGATGAGAT TTTTGGGCTC TCTACACCTA AAAAATTTCC ACTTGCTACT GTGATTGAGC
181 CAAGACTTTC ACCAAAACTT TACTCTGTTT **GA**
```
SEQ ID 112
YSMGLKAIQASLANLLHGFNWSLPDNMTPEDLNMDEIFGLSTPKKFPLATVIEPRLSPKLYSV

FIG. 57

SEQ ID 113   **D144-AH1**
```
  1 TAT AGCTTGGGGC TCAAGGAGAT TCAAGCTAGC
 61 TTAGCTAATC TTCTACATGG ATTTAACTGG TCATTGCCTG ATAATATGAC TCCTGAGGAC
121 CTCAACATGG ATGAGATTTT TGGGCTCTCT ACACCTAAAA AATTTCCACT TGCTACTGTG
181 ATTGAGCCAA GACTTTCACC AAAACTTTAC TCTGTT**TGA**
```
SEQ ID 114
YSLGLKEIQASLANLLHGFNWSLPDNMTPEDLNMDEIFGLSTPKKFPLATVIEPRLSPKLYSV

FIG. 58

SEQ ID 115   **D34-65**
```
  1 CATAGCTTG GGGCTCAAGG TGATTCAAGC TAGCTTAGCT
 61 AATCTTCTAC ATGGATTTAA CTGGTCATTG CCTGATAATA TGACTCCTGA GGACCTCAAC
121 ATGGATGAGA TTTTTGGGCT CTCTACACCT AAAAAATTTC CACTTGCTAC TGTGATTGAG
181 CCAAGACTTT CACCAAAACT TTACTCTGTT **TGA**
```
SEQ ID 116
HSLGLKVIQASLANLLHGFNWSLPDNMTPEDLNMDEIFGLSTPKKFPLATVIEPRLSPKLYSV

FIG. 59

SEQ ID 117   **D35-BG2**
```
  1 CTGTGCTTT CCATGTTTAA TCTCTAGTTA TATACTGGCT
 61 TTGAATGTGA ATCTGTATCA TAATTTCTTG CAAATTTCTC CTTCCATTTC TTAT**TAA**
```
SEQ ID 118
LCFPCLISSYILALNVNLYHNFLQISPSISY

FIG. 60

SEQ ID 119   **D73A-AH7**
```
  1 TCTG GACTTGCTCA ATGTGTGGTT GGTTTAGCTT TAGCAACTCT AGTGCAGTGT
121 TTTGAGTGGA AAAGGGTAAG CGAAGAGGTG GTTGATTTGA CGGAAGGAAA AGGTCTCACT
181 ATGCCAAAAC CCGAGCCACT CATGGCTAGG TGCGAAGCTC GTGACATTTT TCACAAAGTT
241 CTTTCAGAAA TATCT**TAA**
```
SEQ ID 120
SGLAQCVVGLALATLVQCFEWKRVSEEVVDLTEGKGLTMPKPEPLMARCEARDIFHKVLSEIS

SEQ ID 121　　　　　**D58-AA1**
```
  1 TTGGGCTTG GCAACGGTGC ATGTGAATTT GATGTTGGCC
 61 CGAATGATTC AAGAATTTGA ATGGTCCGCT TACCCGGAAA ATAGGAAAGT GGATTTTACT
121 GAGAAATTGG AATTTACTGT GGTGATGAAA AATCCTTTAA GAGCTAAGGT CAAGCCAAGA
181 ATGCAAGTGG TGTAA
```
SEQ ID 122
```
LGLATVHVNLMLARMIQEFEWSAYPENRKVDFTEKLEFTVVMKNPLRAKVKPRMQVV
```


FIG. 62

SEQ ID 123　　　　　**D73A-AE10**
```
  1 TATGCTT TGGCTATGCT TCATTTAGAG
121 TACTTTGTGG CTAATTTGGT TTGGCATTTT CGATGGGAGG CTGTGGAGGG AGATGATGTT
181 GATCTTTCAG AAAAGCTAGA ATTCACCGTT GTGATGAAGA ATCCACTTCG AGCTCGTATC
241 TGCCCCAGAG TTAACTCTAT TTGA
```
SEQ ID 124
```
YALAMLHLEYFVANLVWHFRWEAVEGDDVDLSEKLEFTVVMKNPLRARICPRVNSI
```


FIG. 63

SEQ ID 125　　　　　**D56A-AC12**
```
  1 GGTCAGCAAG TTGGACTTCT TAGAACAACC ATTTTCATCG CCTCATTACT GTCTGAATAT
 61 AAGCTGAAAC CTCGCTCACA CCAGAAACAA GTTGAACTCA CCGATTTAAA TCCAGCAAGT
121 TGGCTTCATT CGATAAAAGG CGAACTGTTA GTCGATGCGA TTCCTCGAAA GAAGGCGGCA
181 TTTTAA
```
SEQ ID 126
```
GQQVGLLRTTIFIASLLSEYKLKPRSHQKQVELTDLNPASWLHSIKGELLVDAIPRKKAAF
```


FIG. 64

SEQ ID 127　　　　　**D177-BF7**
```
  1 ATCACATTTG CTAAGTTTGT GAATGAGCTA
121 GCATTGGCAA GATTAATGTT CCATTTTGAT TTCTCGCTAC CAAAAGGAGT TAAGCATGAG
181 GATTTGGACG TGGAGGAAGC TGCTGGAATT ACTGTTAGAA GGAAGTTCCC CCTTTTAGCC
241 GTCGCCACTC CATGCTCGTG A
```
SEQ ID 128
```
ITFAKFVNELALARLMFHFDFSLPKGVKHEDLDVEEAAGITVRRKFPLLAVATPCS
```


FIG. 65

SEQ ID 129　　　　　**D73A-AG3**
```
  1 CA GAGGTATGCT ATAAACCATT TGATGCTCTT TATTGCGTTG
121 TTCACGGCTC TGATTGATTT CAAGAGGCAC AAAACGGACG GCTGTGATGA TATCGCGTAT
181 ATTCCAACCA TTGCTCCAAA GGATGATTGT AAAGTGTTCC TTTCACAGAG GTGCACTCGA
241 TTCCCATCTT TTTCATGA
```
SEQ ID 130
```
QRYAINHLMLFIALFTALIDFKRHKTDGCDDIAYIPTIAPKDDCKVFLSQRCTRFPSFS
```

SEQ ID 131   D70A-AA12
```
  1 ATG TCATTTGGTT TAGCTAATCT TTACTTACCA TTGGCTCAAT
121 TACTCTATCA CTTTGACTGG AAACTCCCAA CCGGAATCAA GCCAAGAGAC TTGGACTTGA
181 CCGAATTATC GGGAATAACT ATTGCTAGAA AGGGTGACCT TTACTTAAAT GCTACTCCTT
241 ATCAACCTTC TCGAGAGTAA
```
SEQ ID 132
MSFGLANLYLPLAQLLYHFDWKLPTGIKPRDLDLTELSGITIARKGDLYLNATPYQPSRE

FIG. 67

SEQ ID 133   D185-BC1
```
  1 TTGGGCTTG GCAACGGTGC ATGTGAATTT GATGTTGGCC
 61 CGAACGATTC AAGAATTTGA ATGGTCCGCT TACCCGGAAA ATAGGAAAGT GGATTTtACT
121 GAGAAATTGG AATTTACTGT GGTGATGAAA AACCCTTTAA GAGCTAAGGT CAAGCCAAGA
181 ATGCAAGTGG TGTAA
```
SEQ ID 134
LGLATVHVNLMLARTIQEFEWSAYPENRKVDFTEKLEFTVVMKNPLRAKVKPRMQVV

FIG. 68

SEQ ID 135   D185-BG2
```
  1 TTGGGCTTG GCAACGGTGC ATGTGAATTT GATGTTGGCC
 61 CGAATGATTC AAGAATTTGA ATGGTCCGCT TACCCGGAAA ATAGGAAAGT GGATTTACTG
121 AGAAATTGGA ATTTACTGTG GTGA
```
SEQ ID 136
LGLATVHVNLMLARMIQEFEWSAYPENRKVDLLRNWNLLW

FIG. 69

SEQ ID 137   D185-BE1
```
  1 ATCACATTT GCTAAGTTTG TGAATGAGCT AGCATTGGCA
 61 AGATTAATGT TCCATTTTGA TTTCTCGCTA CCAAAAGGAG TTAAGCATGA GGATTTGGAC
121 GTGGAGGAAG CTGCTGGAAT TACTGTTAGG AGGAAGTTCC CCCTTTTAGC CGTCGCCACT
181 CCATGCTCGT GA
```
SEQ ID 138
ITFAKFVNELALARLMFHFDFSLPKGVKHEDLDVEEAAGITVRRKFPLLAVATPCS

FIG. 70

SEQ ID 139   D185-BD2
```
  1 ATCACATTT GCTAAGTTTG TGAATGAGCT AGCATTGGCA
 61 AGATTAATGT TCCATTTTGA TTTCTCGCTA CCAAAAGGAG TTAAGCATGC GGATTTGGAC
121 GTGGAGGAAG CTGCTGGAAT TACTGTTAGA AGGAAGTTCC CCCTTTTAGC CGTCGCCACT
181 CCATGCTCGT GA
```
SEQ ID 140
ITFAKFVNELALARLMFHFDFSLPKGVKHADLDVEEAAGITVRRKFPLLAVATPCS

SEQ ID 141   D176-BG2

```
  1 CA AAATTTTGCC ATGTTAGAAG CAAAGACTAC TTTGGCTATG
121 ATCCTACAAC GCTTCTCCTT TGAACTGTCT CCATCTTATG CACATGCTCC TCAGTCCATA
181 ATAACTTTGC AACCCCAGTA TGGTGCTCCA CTTATTTTGC ATAAAATA**TA G**
```

SEQ ID 142

QNFAMLEAKTTLAMILQRFSFELSPSYAHAPQSIITLQPQYGAPLILHKI

FIG. 72

SEQ ID 143   D185-BD3

```
  1 ATTATCCTT GCACTGCCAA TTCTTGGCAT TACCTTGGGA
 61 CGCTTGGTGC AGAACTTTGA GTTGTTGCCT CCTCCAGGAC AGTCAAAGCT TGACACAACA
121 GAGAAAGGCG GGCAATTCAG TCTGCACATT TTGAAGCATT CCACCATTGT GATGAAACCA
181 AGATCTTTT**T AA**
```

SEQ ID 144

IILALPILGITLGRLVQNFELLPPPGQSKLDTTEKGGQFSLHILKHSTIVMKPRSF

FIG. 73

SEQ ID 145   D176-BC3

```
  1 C AAAATTTTGC CATGTTAGAA GCAAAGACTA CTTTGGCTAT
121 GATCCTACAA CGCTTCTCCT TTGAACTGTC TCCATCTTAT GCACATGCTC CTCAGTCCAT
181 AATAACTTGC AACCCCAGTA TGGTGCTCCA CTTATTTTGC ATAAAATATA GTTTATTACT
241 TGTAAGTAGT GTCTCGTTTT ATGTTAAGCA TGAGTCCAAA ATGTTAAGGC TTGTAGAACT
301 GCAAATGGG AATGCATTTG CACTCGTGCA CTGTAGATTG TTG**TAA**
```

SEQ ID 146

QNFAMLEAKTTLAMILQRFSFELSPSYAHAPQSIITCNPSMVLHLFCIKYSLLLVSSVSFYVKHESKMLRLVELQNGNA
FALVHCRLL

FIG. 74

SEQ ID 147   D176-BB3

```
  1 GCTGAT
 61 ATGGGGTTGC GAGCAGTTTC TTTGGCATTA GGTGCACTTA TTCAATGCTT TGACTGGCAA
121 ATTGAGGAAG CGGAAAGCTT GGAGGAAAGC TATAATTCTA GAATGACTAT GCAGAACAAG
181 CCTTTGAAGG TTGTCTGCAC TCCACGCGAA GATCTTGGCC AGCTTCTATC CCAACTC**TAA**
```

SEQ ID 148

ADMGLRAVSLALGALIQCFDWQIEEAESLEESYNSRMTMQNKPLKVVCTPREDLGQLLSQL

NAME   D89-AB1
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 149
      1 CTTCCTTCCT AAGTCCTAAC TAAAAATGGA GATTCAGTTT TCTAACTTAG TTGCATTCTT
     61 GCTCTTTCTC TCCAGCATCT TTCTTCTATT CAAAAAATGG AAAACCAGAA AACTAAATTT
    121 GCCTCCTGGT CCATGGAAAT TACCTTTTAT TGGAAGTTTA CACCATTTGG CTGTGGCAGG
    181 TCCACTTCCT CACCATGGCC TAAAAAATTT AGCCAAACGC TATGGTCCTC TTATGCATTT
    241 ACAACTTGGA CAAATTCCTA CACTCATCAT ATCATCACCT CAAATGGCAA AAGAAGTACT
    301 AAAAACTCAC GACCTCGCTT TTGCCACTAG ACCAAAGCTT GTCGCGGCCG ACATCATTCA
    361 CTACGACAGC ACGGACATAG CATTTTCTCC GTACGGTGAA TACTGGAGAC AAATTCGTAA
    421 AATTTGCATA TTGGAACTCT TGAGTGCCAA GATGGTCAAA TTTTTTAGCT CGATTCGCCA
    481 AGATGAGCTC TCGAAGATGC TCTCATCTAT ACGAACGACA CCCAATCTTA CAGTCAATCT
    541 TACTGACAAA ATTTTTTGGT TTACGAGTTC GGTAACTTGT AGATCAGCTT TAGGGAAGAT
    601 ATGTGGTGAC CAAGACAAAT TGATCATTTT TATGAGGGAA ATAATATCAT TGGCAGGTGG
    661 ATTTAGTATT GCTGATTTTT TCCCTACATG GAAAATGATT CATGATATTG ATGGTTCGAA
    721 ATCTAAACTG GTGAAAGCAC ATCGTAAGAT TGATGAAATT TTGGGAAATG TTGTTGATGA
    781 GCACAAAAAG AACAGAGCAG ATGGCAAGAA GGGTAATGGT GAATTTGGTG GTGAAGATTT
    841 GATTGATGTA TTGTTAAGAG TTAGAGAAAG TGGAGAAGTT CAAATTCCTA TCACAAATGA
    901 CAATATCAAA TCAATATTAA TCGACATGTT CTCTGCAGGA TCTGAAACAT CATCGACGAC
    961 TATAATTTGG GCATTAGCTG AAATGATGAA GAAACCAAGT GTTTTAGCAA AGGCACAAGC
   1021 TGAAGTAAGG CAAGCTTTGA AGGAGAAAAA AGGTTTTCAA CAGATTGATC TTGATGAGCT
   1081 AAAATATCTC AAGTTAGTAA TCAAAGAAAC CTTAAGAATG CACCCTCCAA TTCCTCTATT
   1141 AGTTCCTAGA GAATGTATGG AGGATACAAA GATTGATGGT TACAATATAC CTTTCAAAAC
   1201 AAGAGTCATA GTTAATGCAT GGGCAATCGG ACGAGATCCA GAAAGTTGGG ATGACCCCGA
   1261 AAGCTTTATG CCAGAGAGAT TTGAGAATAG TTCTATTGAC TTTCTTGGAA ATCATCATCA
   1321 GTTTATACCA TTTGGTGCAG GAAGAAGGAT TTGTCCGGGA ATGCTATTTG GTTTAGCTAA
   1381 TGTTGGACAA CCTTTAGCTC AGTTACTTTA TCACTTCGAT TGGAAACTCC CTAATGGACA
   1441 AAGTCATGAG AATTTCGACA TGACTGAGTC ACCTGGAATT TCTGCTACAA GAAAGGATGA
   1501 TCTTGTTTTG ATTGCCACTC CTTATGATTC TTATTAAGCA GTAGCAGAAA TAAAAAGCCG
   1561 GGGCAAACAG AAAAAA

SEQ. ID. NO. 150
      1 MEIQFSNLVA FLLFLSSIFL LFKKWKTRKL NLPPGPWKLP FIGSLHHLAV AGPLPHHGLK
     61 NLAKRYGPLM HLQLGQIPTL IISSPQMAKE VLKTHDLAFA TRPKLVAADI IHYDSTDIAF
    121 SPYGEYWRQI RKICILELLS AKMVKFFSSI RQDELSKMLS SIRTTPNLTV NLTDKIFWFT
    181 SSVTCRSALG KICGDQDKLI IFMREIISLA GGFSIADFFP TWKMIHDIDG SKSKLVKAHR
    241 KIDEILGNVV DEHKKNRADG KKGNGEFGGE DLIDVLLRVR ESGEVQIPIT NDNIKSILID
    301 MFSAGSETSS TTIIWALAEM MKKPSVLAKA QAEVRQALKE KKGFQQIDLD ELKYLKLVIK
    361 ETLRMHPPIP LLVPRECMED TKIDYNIPF KTRVIVNAWA IGRDPESWDD PESFMPERFE
    421 NSSIDFLGNH HQFIPFGAGR RICPGMLFGL ANVGQPLAQL LYHFDWKLPN GQSHENFDMT
    481 ESPGISATRK DDLVLIATPY DSY

NAME   D89-AD2
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 151
```
      1 TCCTTCTTCC TTCCTAAGTC CTAACTAAAA ATGGAGATTC AGTTTTCTAA CTTAGTTGCA
     61 TTCTTGCTCT TTCTCTCCAG CATCTTTCTT CTATTCAAAA AATGGAAAAC CAGAAAACTA
    121 AATTTGCCTC CTGGTCCATG GAAATTACCT TTTATTGGAA GTTTACACCA TTTGGCTGTG
    181 GCAGGTCCAC TTCCTCACCA TGGCCTAAAA AATTTAGCCA AACGCTATGG TCCTCTTATG
    241 CATTTACAAC TTGGACAAAT TCCTACACTC ATCATATCAT CACCTCAAAT GGCAAAAGAA
    301 GTACTAAAAA CTCACGACCT CGCTTTTGCC ACTAGACCAA AGCTTGTCGT GGCCGACATC
    361 ATTCACTACG ACAGCACGGA CATAGCATTT TCTCCGTACG GTGAATACTG GAGACAAATT
    421 CGTAAAATTT GCATATTGGA ACTCTTGAGT GCCAAGATGG TCAAATTTTT TAGCTCGATT
    481 CGCCAAGATG AGCTCTCGAA GATGCTCTCA TCTATACGAA CGACACCCAA TCTTACAGTC
    541 AATCTTACTG ACAAAATTTT TTGGTTTACG AGTTCGGTAA CTTGTAGATC AGCTTTAGGG
    601 AAGATATGTG GTGACCAAGA CAAATTGATC ATTTTTATGA GGGAAATAAT ATCATTGGCA
    661 GGTGGATTTA GTATTGCTGA TTTTTTCCCT ACATGGAAAA TGATTCATGA TATTGATGGT
    721 TCGAAATCTA AACTGGTGAA AGCACATCGT AAGATTGATG AAATTTTGGG AAATGTTGTT
    781 GATGAGCACA AAAAGAACAG AGCAGATGGC AAGAAGGGTA ATGGTGAATT TGGTGGTGAA
    841 GATTTGATTG ATGTATTGTT AAGAGTTAGA GAAAGTGGAG AAGTTCAAAT TCCTATCACA
    901 AATGACAATA TCAAATCAAT ATTAATCGAC ATGTTCTCTG CGGGATCTGA AACATCATCG
    961 ACGACTATAA TTTGGGCATT AGCTGAAATG ATGAAGAAAC CAAGTGTTTT AGCAAAGGCA
   1021 CAAGCTGAAG TAAGGCAAGC TTTGAAGGAG AAAAAAGGTT TTCAACAGAT TGATCTTGAT
   1081 GAGCTAAAAT ATCTCAAGTT AGTAATCAAA GAAACCTTAA GAATGCACCC TCCAATTCCT
   1141 CTATTAGTTC CTAGAGAATG TATGGAGGAT ACAAAGATTG ATGGTTACAA TATACCTTTC
   1201 AAAACAAGAG TCATAGTTAA TGCATGGGCA ATCGGACGAG ATCCAGAAAG TTGGGATGAC
   1261 CCCGAAAGCT TTATGCCAGA GAGATTTGAG AATAGTTCTA TTGACTTTCT TGGAAATCAT
   1321 CATCAGTTTA TACCATTTGG TGCAGGAAGA AGGATTTGTC CGGGAATGCT ATTTGGTTTA
   1381 GCTAATGTTG GACAACCTTT AGCTCAGTTA CTTTATCACT TCGATTGGAA ACTCCCTAAT
   1441 GGACAAAGTC ATGAGAATTT CGACATGACT GAGTCACCTG GAATTCTGC TACAAGAAAG
   1501 GATGATCTTG TTTTGATTGC CACTCCTTAT GATTCTTATT AAGCAGTAGC AGAAATAAAA
   1561 AGCCGGGGCA AACAGAAAAA A
```

SEQ. ID. NO. 152
```
      1 MEIQFSNLVA FLLFLSSIFL LFKKWKTRKL NLPPGPWKLP FIGSLHHLAV AGPLPHHGLK
     61 NLAKRYGPLM HLQLGQIPTL IISSPQMAKE VLKTHDLAFA TRPKLVVADI IHYDSTDIAF
    121 SPYGEYWRQI RKICILELLS AKMVKFFSSI RQDELSKMLS SIRTTPNLTV NLTDKIFWFT
    181 SSVTCRSALG KICGDQDKLI IFMREIISLA GGFSIADFFP TWKMIHDIDG SKSKLVKAHR
    241 KIDEILGNVV DEHKKNRADG KKGNGEFGGE DLIDVLLRVR ESGEVQIPIT NDNIKSILID
    301 MFSAGSETSS TTIIWALAEM MKKPSVLAKA QAEVRQALKE KKGFQQIDLD ELKYLKLVIK
    361 ETLRMHPPIP LLVPRECMED TKIDGYNIPF KTRVIVNAWA IGRDPESWDD PESFMPERFE
    421 NSSIDFLGNH HQFIPFGAGR RICPGMLFGL ANVGQPLAQL LYHFDWKLPN GQSHENFDMT
    481 ESPGISATRK DDLVLIATPY DSY
```

```
NAME        D90A-BB3
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 153
      1 CAACTGCAGT TTGAAGATAC CAACTAACCA AAATGCAGTT CTTCAGCTTG GTTTCCATTT
     61 TCCTATTTCT ATCTTTTCTC TTTTTGTTAA GGAAATGGAA GAACTCGAAT AGCCAAAGGA
    121 AAAAATTGCC ACCAGGTCCA TGGAAACTAC CAATACTAGG AAGTATGCTT CATATGGTTG
    181 GTGGACTACC ACACCATGTC CTTAGAGATT TAGCCAAAAA ATATGGACCG CTTATGCACC
    241 TTCAATTAGG TGAAGTTTCT GCAGTTGTGG TTACTTCTCC TGATATGGCA AAAGAAGTAC
    301 TAAAAACTCA TGACATCGCT TTCGCGTCTA GGCCTAGCCT TTTGGCCCCG GAGATTGTCT
    361 GTTACAATAG GTCTGATCTT GCGTTTTGCC CCTATGGCGA TTATTGGAGA CAAATGCGTA
    421 AAATATGTGT CTTGGAAGTG CTCAGTGCCA AGAATGTTCG GACATATAGC TCTATTAGGC
    481 GCGATGAAGT TCTTCGTCTC CTTAATTTTA TCCGGTCATC TTCTGGTGAG CCTGTTAATA
    541 TTACGGAAAG GATCTTTTTG TTCACAAGCT CCATGACATG TAGATCAGCG TTTGGGCAAG
    601 TATTCAAGGA GCAAGACAAA TTTATACAAC TAATTAAAGA AGTTATACTC TTAGCAGGAG
    661 GGTTTGATGT GGCTGACATA TTCCCTTCAT ACAAGTCTCT TCATGTGCTC AGTGGAATGA
    721 AGGGTAAGAT TATGAATGCA CACCATAAGG TAGATGCTAT TGTTGAGAAT GTCATCAACG
    781 AGCACAAGAA AAATCTTGCA ATTGGGAAAA CTAATGGAGC GTTAGGAGGT GAAGATTTAA
    841 TTGATGTTCT TCTAAAACTT ATGAATGATG GAGGCCTTCA ATTTCCTATC ACCAACGACA
    901 ACATCAAAGC TATAATCTTT GACATGTTTG CTGCTGGAAC AGAGACTTCA TCGTCAACAA
    961 TTGTGTGGGC TATGGTGGAA ATGGTGAAAA ATCCAACTGT ATTTGCGAAA GCTCAAGCAG
   1021 AAGTAAGAGA TGCATTTAGA GAAAAAGAAA CTTTTGATGA AAATGATGTG GAGGAGCTAA
   1081 ACTATCTAAA GTTAGTCATT AAAGAAACTC TAAGACTTCA TCCACCGGTT CCACTTTTGC
   1141 TCCCAAGAGA ATGTAGGGAA GAGACAAATA TAAACGGCTA CACTATTCCT GTAAAGACCA
   1201 AAGTCATGGT TAATGTTTGG GCATTGGGAA GAGATCCAAA ATATTGGGAT GATGCAGAAA
   1261 CTTTTAAGCC AGAGAGATTT GAGCAGTGCT CTAAGGATTT TGTTGGTAAT AATTTTGAAT
   1321 ATCTTCCATT TGGTGGTGGA AGGAGGATTT GTCCAGGGAT TTCGTTTGGT TTAGCTAATG
   1381 CTTATTTGCC ATTGGCTCAA TTACTTTATC ACTTTGATTG GGAACTCCCC ACTGGAATCA
   1441 AACCAAGCGA CTTGGACTTG ACTGAGTTGG TTGGAGTAAC TGCCGCTAGA AAAAGTGACC
   1501 TTTACTTGGT TGCGACTCCT TATCAACCTC CTCAAAAC

SEQ. ID. NO. 154
      1 MQFFSLVSIF LFLSFLFLLR KWKNSNSQRK KLPPGPWKLP ILGSMLHMVG GLPHHVLRDL
     61 AKKYGPLMHL QLGEVSAVVV TSPDMAKEVL KTHDIAFASR PSLLAPEIVC YNRSDLAFCP
    121 YGDYWRQMRK ICVLEVLSAK NVRTYSSIRR DEVLRLLNFI RSSSGEPVNI TERIFLFTSS
    181 MTCRSAFGQV FKEQDKFIQL IKEVILLAGG FDVADIFPSY KSLHVLSGMK GKIMNAHHKV
    241 DAIVENVINE HKKNLAIGKT NGALGGEDLI DVLLKLMNDG GLQFPITNDN IKAIIFDMFA
    301 AGTETSSSTI VWAMVEMVKN PTVFAKAQAE VRDAFREKET FDENDVEELN YLKLVIKETL
    361 RLHPPVPLLL PRECREETNI NGYTIPVKTK VMVNVWALGR DPKYWDDAET FKPERFEQCS
    421 KDFVGNNFEY LPFGGGRRIC PGISFGLANA YLPLAQLLYH FDWELPTGIK PSDLDLTELV
    481 GVTAARKSDL YLVATPYQPP QN
```

```
NAME              D95-AG1
ORGANISM     NICOTIANA TABACUM
SEQ. ID. NO. 155
      1 AAAAGATGTC TTCATTTTCC ACATCTTCTG CCACTTCTAA TTCCAAACTT CCAGTTCGAG
     61 AAATCCCAGG AGACTATGGT TTCCCCTTTT TTGGAGCCAT AAAAGATAGA TATGACTACT
    121 TCTACAACCT CGGCACAGAC GAATTCTTTC TTACCAAAAT GCAAAAATAC AACTCTACTG
    181 TCTTTAGAAC CAACATGCCA CCAGGTCCAT TCATTGCTAA AAATCCCAAA GTAATTGTTC
    241 TCCTCGATGC CAAAACATTT CCCGTTCTTT TCGACAACTC TAAAGTCGAA AAAATGAACG
    301 TTCTTGATGG CACGTACGTG CCATCTACTG ATTTCTATGG CGGATATCGC CCGTGTGCTT
    361 ATCTTGATCC TTCTGAGTCA ACTCATGCCA CACTTAAAGG GTTCTTTTTA TCTTTAATCT
    421 CCCAGCTTCA TAATCAATTT ATTCCTTTAT TTAGAACCTC AATTTCTGGT CTTTTCGCAA
    481 ATCTTGAGAA TGAGATTTCC CAAAATGGCA AAGCGAACTT CAACAATATC AGCGACATTA
    541 TGTCATTCGA TTTTGTTTTT CGTTGTTAT GTGACAAGAC CAGTCCCCAT GACACAAATC
    601 TTGGCTCTAA TGGACCAAAA CTCTTTGATA TATGGCTGTT GCCTCAACTT GCTCCATTGT
    661 TTAGTCTAGG TCTAAAATTT GTGCCGAACT TTCTGGAAGA TTTAATGTTG CATACTTTTC
    721 CCTTGCCATT TTTTCTAGTG AGATCGAATT ACCAGAAGCT TTATGATGCT TTTAGCAAGC
    781 ATGCCGAAAG TACACTGAAT GAAGCAGAGA AGAATGGGAT CAAAAGAGAC GAAGCATGCC
    841 ACAACTTAGT TTTTCTTGCA GGTTTCAATG CTTATGGTGG GATGAAAGTT TTATTCCCTG
    901 CACTGATAAA GTGGGTCGCC AATGGAGGAA AGAGTTTACA CACTCGGCTG GCAAATGAAA
    961 TCAGGACAAT TATCAAAGAA GAATGTGGGA CCATAACTCT ATCAGCAATC AACAAGATGA
   1021 GTTTAGTAAA ATCAGTAGTG TATGAAGTAT TAAGAATTGA ACCTCCAGTT CCATTCCAAT
   1081 ATGGTAAAGC CAAAGAAGAT ATCATAATCC AAAGCCATGA TTCAACTTTC TTAGTCAAGA
   1141 AAGGTGAAAT GATCTTTGGA TATCAGCCTT TTGCTACAAA AGATCCAAAG ATTTTTGACA
   1201 AACCAGAGGA GTTTATTCCG GAGAGGTTCA TGGCCGAAGG GGAAAAATTA TTAAAGTATG
   1261 TGTATTGGTC AAATGCAAGA GAGACAGATG ATCCAACGGT GGACAACAAA CAATGCCCAG
   1321 CGAAAAATCT TGTCGTGCTT TTGTGCAGGT TGATGTTGGT GGAGGTTTTC ATGCGTTACG
   1381 ACACATTCAC AGTGGAGTCA ACAAAGCTCT TTCTTGGGTC ATCAGTAACG TTCACGACTC
   1441 TGGAAAAAGC GACATGAGTT TCAGATATCT TAATTGTAGG CTGCAAATAA TAATGTGGTC
   1501 ATTCTGCAAA TTATTGTACT TGTGCTGATG
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SEQ. ID. NO. 156
      1 MSSFSTSSAT SNSKLPVREI PGDYGFPFFG AIKDRYDYFY NLGTDEFFLT KMQKYNSTVF
     61 RTNMPPGPFI AKNPKVIVLL DAKTFPVLFD NSKVEKMNVL DGTYVPSTDF YGGYRPCAYL
    121 DPSESTHATL KGFFLSLISQ LHNQFIPLFR TSISGLFANL ENEISQNGKA NFNNISDIMS
    181 FDFVFRLLCD KTSPHDTNLG SNGPKLFDIW LLPQLAPLFS LGLKFVPNFL EDLMLHTFPL
    241 PFFLVRSNYQ KLYDAFSKHA ESTLNEAEKN GIKRDEACHN LVFLAGFNAY GGMKVLFPAL
    301 IKWVANGGKS LHTRLANEIR TIIKEECGTI TLSAINKMSL VKSVVYEVLR IEPPVPFQYG
    361 KAKEDIIIQS HDSTFLVKKG EMIFGYQPFA TKDPKIFDKP EEFIPERFMA EGEKLLKYVY
    421 WSNARETDDP TVDNKQCPAK NLVVLLCRLM LVEVFMRYDT FTVESTKLFL GSSVTFTTLE
    481 KAT
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NAME   D96-AB6
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 157
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      1 CCAAAAATGG AGCTTCAATC TTCTCCTTTC AATTTAATTT CTTTGTTCCT CTTCTTTTCT
     61 TTTCATTTTA TTCTAGTGAA GAAATGGAAT GCCAAAATCC CAAAGTTACC TCCAGGTCCG
    121 TGGAGGCTTC CCTTTATTGG AAGCCTCCAT CACTTGAAGG GAAAACTTCC ACACCATAAT
    181 CTTAGAGATC TAGCGCGAAA ATATGGGCCT CTCATGTACT TACAACTCGG AGAAATTCCT
    241 GTAGTTGTAA TATCTTCGCC ACGTGTAGCA AAAGCTGTAC TAAAAACTCA TGATCTCGCT
    301 TTTGCAACTA GACCACGATT CATGTCCTCA GACATTGTGT TTTACAAAAG CAGGGACATC
    361 TCTTTTGCCC CATTTGGTGA TTACTGGAGA CAGATGCGTA AAATATTGAC TCAGGAACTC
    421 CTGAGTAACA AGATGCTCAA GTCATATAGC TTAATCCGAA AGGATGAGCT CTCGAAGCTC
    481 CTCTCATCGA TTCGTTTGGA AACAGGTTCA GCAGTGAACA TAAATGAAAA GCTTCTCTGG
    541 TTTACGAGCT GCATGACCTG TAGATTAGCC TTTGGAAAAA TATGCAATGA TCGGGATGAG
    601 TTGATCATGC TAATTAGGGA GATATTAACA TTATCAGGAG GATTTGATGT GGGTGATTTG
    661 TTCCCTTCCT GGAAATTACT TCATAATATG AGCAACATGA AAGCTAGGTT GACGAATGTA
    721 CACCACAAGT ATGATTTAGT TATGGAGAAC ATCATCAATG AGCACCAAGA GAATCATGCA
    781 GCAGGGATAA AGGGTAACAA CGAGTTTGGT GGCGAAGATA TGATCGATGC TCTACTGAGG
    841 GCTAAGGAGA ATAATGAGCT TCAATTTCCT ATCGAAATG ACAACATGAA AGCAGTAATT
    901 CTGGACTTGT TTATTGCTGG AACTGAAACT TCATATACTG CAATTATATG GCACTATCA
    961 GAATTGATGA AGCACCCAAG TGTGATGGCC AAGGCACAAG CTGAAGTGAG AAAAGTCTTC
   1021 AAAGAAAATG AAAATTTCGA CGAAAATGAT CTTGACAAGT TGCCATACTT AAAATCAGTG
   1081 ATTAAAGAAA CACTAAGGAT GCACCCTCCA GTTCCTTTGT TAGGGCCTAG AGAATGCAGG
   1141 GACCAAACAG AGATCGATGG CTACACTGTA CCTATTAAAG CTAGAGTTAT GGTTAATGCT
   1201 TGGGCGATAG GAAGAGATCC TGAAAGTTGG GAAGATCCTG AAAGTTTCAA ACCGGAGCGA
   1261 TTTGAAAATA CTTCTGTTGA TCTTACAGGA AATCACTATC AGTTCATTCC TTTCGGTTCA
   1321 GGAAGAAGAA TGTGTCCAGG AATGTCGTTT GGTTTAGTTA ACACAGGGCA TCCTTTAGCC
   1381 CAGTTGCTCT ATTGCTTTGA CTGGAAACTC CCTGACAAGG TTAATGCAAA TGATTTTCGC
   1441 ACTACTGAAA CAAGTAGAGT TTTTGCAGCA AGCAAAGATG ACCTCTACTT GATTCCCACA
   1501 AATCACAGGG AGCAAGAATA GCTTAATTTA ATGGAGTTCT TGGAAGAATT AAAGAAGAAG
   1561 GGCTATATAG GTGAGATTTT TTGTATGGTT GCA
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SEQ. ID. NO. 158
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      1 MELQSSPFNL ISLFLFFSFH FILVKKWNAK IPKLPPGPWR LPFIGSLHHL KGKLPHHNLR
     61 DLARKYGPLM YLQLGEIPVV VISSPRVAKA VLKTHDLAFA TRPRFMSSDI VFYKSRDISF
    121 APFGDYWRQM RKILTQELLS NKMLKSYSLI RKDELSKLLS SIRLETGSAV NINEKLLWFT
    181 SCMTCRLAFG KICNDRDELI MLIREILTLS GGFDVGDLFP SWKLLHNMSN MKARLTNVHH
    241 KYDLVMENII NEHQENHAAG IKGNNEFGGE DMIDALLRAK ENNELQFPIE NDNMKAVILD
    301 LFIAGTETSY TAIIWALSEL MKHPSVMAKA QAEVRKVFKE NENFDENDLD KLPYLKSVIK
    361 ETLRMHPPVP LLGPRECRDQ TEIDGYTVPI KARVMVNAWA IGRDPESWED PESFKPERFE
    421 NTSVDLTGNH YQFIPFGSGR RMCPGMSFGL VNTGHPLAQL LYCFDWKLPD KVNANDFRTT
    481 ETSRVFAASK DDLYLIPTNH REQE
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NAME   D96-AC2
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 159

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   1 CTTCTTCCAA AAATGGAGCT TCAATCTTCT CCTTTCAATT TAATTTCTTT GTTCCTCTTC
  61 TTTTCTTTTC TTTTTATTCT AGTGAAGAAA TGGAATGCCA AAATCCCAAA GTTACCTCCA
 121 GGTCCGTGGA GGCTTCCCTT TATTGGAAGC CTCCATCACT TGAAGGGAAA ACTTCCACAC
 181 CATAATCTTA GAGATCTAGC GCGAAAATAT GGACCTCTCA TGTACTTACA ACTCGGAGAA
 241 ATTCCTGTAG TTGTAATATC TTCGCCACGT GTAGCAAAAG CTGTACTAAA AACTCATGAT
 301 CTCGCTTTTG CAACTAGACC ACGATTCATG TCCTCAGACA TTGTGTTTTA CAAAAGCAGG
 361 GACATCTCTT TTGCCCCATT TGGTGATTAC TGGAGACAGA TGCGTAAAAT ATTGACTCAG
 421 GAACTCCTGA GTAACAAGAT GCTCAAGTCA TATAGCTTAA TCCGAAAGGA TGAGCTCTCG
 481 AAGCTCCTCT CATCGATTCG TTTGGAAACA GGTTCTGCAG TGAACATAAA TGAAAAGCTT
 541 CTCTGGTTTA CGAGCTGCAT GACCTGTAGA TTAGCCTTTG GAAAAATATG CAATGATCGG
 601 GATGAGTTGA TCATGCTAAT TAGGGAGATA TTAACATTAT CAGGAGGATT TGATGTGGGT
 661 GATTTGTTCC CTTCCTGGAA ATTACTTCAT AATATGAGCA ACATGAAAGC TAGGTTGACG
 721 AATGTACACC ACAAGTATGA TTTAGTTATG GAGAACATCA TCAATGAGCA CCAAGAGAAT
 781 CATGCAGCAG GGATAAAGGG TAACAACGAG TTTGGTGGCG AAGATATGAT CGATGCTCTA
 841 CTGAGGGCTA AGGAGAATAA TGAGCTTCAA TTTCCTATCG AAAATGACAA CATGAAAGCA
 901 GTAATTCTGG ACTTGTTTAT TGCTGGAACT GAAACTTCAT ATACTGCAAT TATATGGGCA
 961 CTATCAGAAT TGATGAAGCA CCCAAGTGTG ATGGCCAAGG CACAAGCTGA AGTGAGAAAA
1021 GTCTTCAAAG AAAATGAAAA TTTCGACGAA AATGATCTTG ACAAGTTGCC ATACTTAAAA
1081 TCAGTGATTA AAGAAACACT AAGGATGCAC CCTCCAGTTC CTTTGTTAGG GCCTAGAGAA
1141 TGCAGGGACC AAACAGAGAT CGATGGCTAC ACTGTACCTA TTAAAGCTAG AGTTATGGTT
1201 AATGCTTGGG CGATAGGAAG AGATCCTGAA AGTTGGGAAG ATCCTGAAAG TTTCAAACCG
1261 GAGCGATTTG AAAATACTTC TGTTGATCTT ACAGGAAATC ACTATCAGTT CATTCCTTTC
1321 GGTTCAGGAA GAAGAATGTG TCCAGGAATG TCGTTTGGTT TAGTTAACAC AGGGCATCCT
1381 TTAGCCCAGT TGCTCTATTG CTTTGACTGG AAACTCCCTG ACAAGGTTAA TGCAAATGAT
1441 TTTCGCACTA CTGAAACAAG TAGAGTTTTT GCAGCAAGCA AAGATGACCT CTACTTGATT
1501 CCCACAAATC ACAGGGAGCA AGAATAGCTT AATTTAATGG AGTTCTTGGA AGAATTAAAG
1561 AAGAAGGGCT ATATAGGTGA GATTTTTTGT ATGGTTGCA
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SEQ. ID. NO. 160

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   1 MELQSSPFNL ISLFLFFSFL FILVKKWNAK IPKLPPGPWR LPFIGSLHHL KGKLPHHNLR
  61 DLARKYGPLM YLQLGEIPVV VISSPRVAKA VLKTHDLAFA TRPRFMSSDI VFYKSRDISF
 121 APFGDYWRQM RKILTQELLS NKMLKSYSLI RKDELSKLLS SIRLETGSAV NINEKLLWFT
 181 SCMTCRLAFG KICNDRDELI MLIREILTLS GGFDVGDLFP SWKLLHNMSN MKARLTNVHH
 241 KYDLVMENII NEHQENHAAG IKGNNEFGGE DMIDALLRAK ENNELQFPIE NDNMKAVILD
 301 LFIAGTETSY TAIIWALSEL MKHPSVMAKA QAEVRKVFKE NENFDENDLD KLPYLKSVIK
 361 ETLRMHPPVP LLGPRECRDQ TEIDGYTVPI KARVMVNAWA IGRDPESWED PESFKPERFE
 421 NTSVDLTGNH YQFIPFGSGR RMCPGMSFGL VNTGHPLAQL LYCFDWKLPD KVNANDFRTT
 481 ETSRVFAASK DDLYLIPTNH REQE
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NAME        D98-AA1
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 161
      1 CTTTCTTTCT TGTACCGAGA TGGAGTTTCA ACACTTGGTT TCGTTCTTGC TATTCATCTC
     61 CTTCATCTTT CTTCTAATTC AAAAATGGAG GAAATCGAAA AAGCTGCCAC CTGGTCCGTG
    121 GAGGCTACCT ATTATTGGAA GTGTGCATCA CTTGACAAGT GGAGTACCAC ATCGAGTTCT
    181 CAGAAATTTA TCACAAAAAT TTGGCCCGAT CATGTACTTG CAGCTCGGGG AAGTTCCCAC
    241 AGTAGTTGTA TCCTCCCCAC ACATGGCCAA ACAAATTTTA AAAACTCATG ACCTCGCTTT
    301 TGCATCTAGG CCAGAAATCA TGATGGGAAA AATTATTTGC TACGATTGTA AGGACATTGC
    361 CTTTTCCCCG TATGGTGATT ATTGGAGACA TATGCGTAAA TTGAGCACCT GGAACTACT
    421 TAGTGCCAAG ATGGTCAAGT CCTTCAGTCC AATTCGTCAA GATGAGCTCT CAAGTCTCCT
    481 ATCATCCATT GAATCAATGG GAAATTTGCC AATCAACTTA GTAGAAAAAC TTTTATGGTT
    541 TATGAATGCC GCGACATGTA GGTCAGCATT TGGGAAAGTG TGTAAAGATC AAAAAGAGTT
    601 GATAACATTG ATTCAACGAG CAGAATCATT ATCTGGTGGA TTCGAGCTGG CTGATTTGTT
    661 CCCTTCGAAG AAGTTTCTAC ATGGTATTAG TGGGATGCGA TCTAAACTAA TGGAAGCTCG
    721 TAACAAGATA GACGCAGTCT TGGACAACAT TATCAATGTG CACAGAGAGA ATCGGGCAAA
    781 TGGAAATAGT TGTAATGGTG AGTCTGGAAC TGTAGATTTC ATCGATGTTT TTCTAAGGGT
    841 CATGGAGAGT GGCGAATTAC CATTTCCGAT AGAAAATGAC AACATCAAAG CAGTTATTCT
    901 TGACATGTTC GTAGCAGGAT CTGACACATC ATCTTCAACC GTTATTTGGG CATTAACAGA
    961 AATGATGAAG AATCCAAAAG TCATGGCTAA AGCACAAGCT GAAGTGAGAG AAGCTTTTAA
   1021 AGGAAAGAAA GCATGTGATG AGGATACTGA TCTTGAAAAG CTTCATTACC TAAATTTAGT
   1081 GATCAAAGAG ACACTCCGAT TACACCCTCC AACTCCTCTA CTTGTCCCGC GAGAATGCAG
   1141 GGAGGAAACA GAGATAGAAG GATTCACTAT ACCATTGAAA AGCAAAGTCT TGGTTAACGT
   1201 ATGGGCAATT GGAAGAGATC CCGAGAATTG GAAAAATCCT GAATGTTTTA TACCAGAGAG
   1261 ATTCGAAAAT AGTTCTATTG AGTTACTGG AAATCATTTT CAACTTCTTC CGTTTGGCGC
   1321 TGGAAGACGA ATTTGTCCAG GAATGCAATT TGGTTTGGCT CTTGTTACTC TGCCATTGGC
   1381 TCATTTGCTT CACAATTTTG ATTGGAAACT TCCCGAAGGA ATTAATGCAA GGGATTTGGA
   1441 CATGACAGAG GCAAATGGGA TATCTGCTAG AAGAGAAAAA GATCTTTACT TGATTGCTAC
   1501 TCCTTATGTA TCACCTCTTG ATTAACTCTG AAATTTTGCT TTAATGCTGC TTGCTTGCTT
   1561 CACT

SEQ. ID. NO. 162
      1 MEFQHLVSFL LFISFIFLLI QKWRKSKKLP PGPWRLPIIG SVHHLTSGVP HRVLRNLSQK
     61 FGPIMYLQLG EVPTVVVSSP HMAKQILKTH DLAFASRPEI MMGKIICYDC KDIAFSPYGD
    121 YWRHMRKLST LELLSAKMVK SFSPIRQDEL SSLLSSIESM GNLPINLVEK LLWFMNAATC
    181 RSAFGKVCKD QKELITLIQR AESLSGGFEL ADLFPSKKFL HGISGMRSKL MEARNKIDAV
    241 LDNIINVHRE NRANGNSCNG ESGTVDFIDV FLRVMESGEL PFPIENDNIK AVILDMFVAG
    301 SDTSSSTVIW ALTEMMKNPK VMAKAQAEVR EAFKGKKACD EDTDLEKLHY LNLVIKETLR
    361 LHPPTPLLVP RECREETEIE GFTIPLKSKV LVNVWAIGRD PENWKNPECF IPERFENSSI
    421 EFTGNHFQLL PFGAGRRICP GMQFGLALVT LPLAHLLHNF DWKLPEGINA RDLDMTEANG
    481 ISARREKDLY LIATPYVSPL D
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NAME   D98-AG1
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 163
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      1 CTTTCTTGTA CCGAGATGGA GTTTCAACAC TTGGTTTCGT TCTTGCTATT CATCTCCTTC
     61 ATCTTTCTTC TAATTCAAAA ATGGAGGAAA TCGAAAAAGC TGCCACCTGG TCCGTGGAGG
    121 CTACCTATTA TTGGAAGTGT GCATCACTTG ACAAGTGGAG TACCACATCG AGTTCTCAGA
    181 AATTTATCAC AAAAATTTGG CCCGATCATG TACTTGCAGC TCGGGGAAGT TCCCACAGTA
    241 GTTGTATCCT CCCCACACAT GGCCAAACAA ATTTTAAAAA CTCATGACCT CGCTTTTGCA
    301 TCTAGGCCAG AAATCATGAT GGGAAAAATT ATTTGCTACG ATTGTAAGGA CATTGCCTTT
    361 TCCCCGTATG GTGATTATTG GAGACATATG CGTAAATTGA GCACCTTGGA ACTACTTAGT
    421 GCCAAGATGG TCAAGTCCTT CAGTCCAATT CGTCAAGATG AGCTCTCAAG TCTCCTATCA
    481 TCCATTGAAT CAATGGGAAA TTTGCCAATC AACTTAGTAG AAAAACTTTT ATGGTTTATG
    541 AATGCCGCGA CATGTAGGTC AGCATTTGGG AAAGTGTGTA AAGATCAAAA AGAGTTGATA
    601 ACATTGATTC AACGAGCAGA ATCATTATCT GGTGGATTCG AGCTGGCTGA TTTGTTCCCT
    661 TCGAAGAAGT TTCTACATGG TATTAGTGGG ATGCGATCTA AACTAATGGA AGCTCGTAAC
    721 AAGATAGACG CAGTCTTGGA CAACATTATC AATGTGCACA GAGAGAATCG GGCAAATGGA
    781 AATAGTTGTA ATGGTGAGTC TGGAACTGTA GATTTCATCG ATGTTTTTCT AAGGGTCATG
    841 GAGAGTGGCG AATTACCATT TCCGATAGAA AATGACAACA TCAAAGCAGT TATTCTTGAC
    901 ATGTTCGTAG CAGGATCTGA CACATCATCT TCAACCGTTA TTTGGGCATT AACAGAAACG
    961 ATGAAGAATC CAAAAGTCAT GGCTAAAGCA CAAGCTGAAG TGAGAGAAGC TTTTAAAGGA
   1021 AAGAAAGCAT GTGATGAGGA TACTGATCTT GAAAAGCATC ATTACCTAAA TTTAGTGATC
   1081 AAAGAGACAC TCCGATTACA CCCTCCAACT CCTCTACTTG TCCCGCGAGA ATGCAGGGAG
   1141 GAAACAGAGA TAGAAGGATT CACTATACCA TTGAAAAGCA AAGTCTTGGT TAACGTATGG
   1201 GCAATTGGAA GAGATCCCGA GAATTGGAAA AATCCTGAAT GTTTTATACC AGAGAGATTC
   1261 GAAAATAGTT CTATTGAGTT TACTGGAAAT CATTTTCAAC TTCTTCCGTT TGGCGCTGGA
   1321 AGACGAATTT GTCCAGGAAT GCAATTTGGT TTGGCTCTTG TTACTCTGCC ATTGGCTCAT
   1381 TTGCTTCACA ATTTTGATTG GAAACTTCCC GAAGGAATTA ATGCAAGGGA TTTGGACATG
   1441 ACAGAGGCAA ATGGGATATC TGCTAGAAGA GAAAAAGATC TTTACTTGAT TGCTACTCCT
   1501 TATGTATCAC CTCTTGATTA ACTCTGAAAT TTGCTTTAA TGCTGCTTGC TTGCTTCACT
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SEQ. ID. NO. 164
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      1 MEFQHLVSFL LFISFIFLLI QKWRKSKKLP PGPWRLPIIG SVHHLTSGVP HRVLRNLSQK
     61 FGPIMYLQLG EVPTVVVSSP HMAKQILKTH DLAFASRPEI MMGKIICYDC KDIAFSPYGD
    121 YWRHMRKLST LELLSAKMVK SFSPIRQDEL SSLLSSIESM GNLPINLVEK LLWFMNAATC
    181 RSAFGKVCKD QKELITLIQR AESLSGGFEL ADLFPSKKFL HGISGMRSKL MEARNKIDAV
    241 LDNIINVHRE NRANGNSCNG ESGTVDFIDV FLRVMESGEL PFPIENDNIK AVILDMFVAG
    301 SDTSSSTVIW ALTETMKNPK VMAKQAEVR EAFKGKKACD EDTDLEKHHY LNLVIKETLR
    361 LHPPTPLLVP RECREETEIE GFTIPLKSKV LVNVWAIGRD PENWKNPECF IPERFENSSI
    421 EFTGNHFQLL PFGAGRRICP GMQFGLALVT LPLAHLLHNF DWKLPEGINA RDLDMTEANG
    481 ISARREKDLY LIATPYVSPL D
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NAME   D100-BE2
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 165
         1 CAAAAACAAA ATTCCAATGG TTAACATGTT CACTCCAATT ATATACGCTC CTCTCCTTTT
        61 AGCTTTTTAC ATTATCACAA AACATTTCTT ACGCAAACTC AGAAATAATC CACCAGCTCC
       121 ATTTCTTACT TTCCCCTTTA TTGGCCATCT TTATCTCTTC AAAAAACCAC TTCAACGTAC
       181 CTTAGCCAAA ATCTCCGAAC GTTATGGCTC TGTTCTTCTA CTCGAATTCG GTTCACGAAA
       241 AGTACTTTTG GTTTCTTCAC CATCTGCAGC TGAAGAATGC TTAACAAAAA ACGATATTAT
       301 TTTCGCGAAT CGTCCTCTTT TGATGGCTGG AAAACATCTT GGATATAATT TTACATCTTT
       361 GGCTTGGAGT TCGTACGGAG ATCATTGGAG AAATCTGCGA AGGATTACTT CAGTTGAGAT
       421 GTTTTCGACT CATCGTCTTC AAATGCTACA TGGGATTCGT ATTGATGAAG TGAAATCTAT
       481 GGTTAAGAGG CTCAATTCCT CTGCCATAGC TGAAAAATCT GTGGATATGA AGTCTATGTT
       541 TTTTGAGCTG ATGCTCAATG TTATGATGAG GACAATTGCT GGAAAAAGAT ATTACGGTGA
       601 GAATGTGGAG GACATTGAGG AAGCTACGAG ATTCAAAGGT TTGGTGCAAG AGACTTTCAG
       661 GATTGGCGGG GCGACGAATA TTGGCGACTT TTTGCCGGCG TTGAAGTTAT TGGTGAGGAA
       721 ATTGGAGAAA AGTTTAATTG TGTTGCAAGA GAACAGAGAT GAGTTTATGC AGGAATTAAT
       781 TAAAGATTGC AGAAAAAGAA TGGAGAAAGA AGGTACTGTT ACTGATTCAG AAATTGAAGG
       841 GAACAAGAAA TGTTTAATTG AAGTTTTGTT AACACTACAA GAAAATGAAC CGGAATACTA
       901 CAAAGATGAA ATCATCAGAA GCCTTATGCT TGTTCTATTA TCAGCTGGTA CAGATACTTC
       961 AGTTGGGACA ATGGAATGGG CTTTATCATT AATGTTAAAC CACCCTGAAA CTCTGAAGAA
      1021 AGCACAAGCT GAAATTGATG AACATATAGG ACATGAACGT TTAGTGGACG AGTCGGACAT
      1081 CAACAACCTA CCTTACCTAC GTTGTATAAT CAACGAGACA TTCCGAATGT ACCCTGCAGG
      1141 ACCACTACTA GTCCCACACG AGTCGTCAGA GGAAACCACC GTAGGAGGCT ACCGTGTACC
      1201 CGGAGGAACC ATGTTACTTG TGAATTTGTG GGCAATCCAC AATGATCCAA AGCTATGGGA
      1261 TGAACCAAGA AAGTTTAAAC CAGAAAGATT TCAAGGACTA GATGGTGTTA GAGATGGTTA
      1321 CAAAATGATG CCTTTTGGTT CTGGACGAAG GAGTTGTCCT GGAGAAGGAT TGGCTGTTCG
      1381 AATGGTTGCC TTGTCATTGG GATGTATTAT TCAATGTTTT GATTGGCAAC GAATCGGCGA
      1441 AGAATTGGTT GATATGACTG AAGGAACTGG ACTTACTTTG CCTAAAGCTC AACCTTTGGT
      1501 GGCCAAGTGT AGCCCACGAC CTAAAATGGC TAATCTTCTC TCTCAGATTT GA

SEQ. ID. NO. 166
         1 MVNMFTPIIY APLLLAFYII TKHFLRKLRN NPPAPFLTFP FIGHLYLFKK PLQRTLAKIS
        61 ERYGSVLLLE FGSRKVLLVS SPSAAEECLT KNDIIFANRP LLMAGKHLGY NFTSLAWSSY
       121 GDHWRNLRRI TSVEMFSTHR LQMLHGIRID EVKSMVKRLN SSAIAEKSVD MKSMFFELML
       181 NVMMRTIAGK RYYGENVEDI EEATRFKGLV QETFRIGGAT NIGDFLPALK LLVRKLEKSL
       241 IVLQENRDEF MQELIKDCRK RMEKEGTVTD SEIEGNKKCL IEVLLTLQEN EPEYYKDEII
       301 RSLMLVLLSA GTDTSVGTME WALSLMLNHP ETLKKAQAEI DEHIGHERLV DESDINNLPY
       361 LRCIINETFR MYPAGPLLVP HESSEETTVG GYRVPGGTML LVNLWAIHND PKLWDEPRKF
       421 KPERFQGLDG VRDGYKMMPF GSGRRSCPGE GLAVRMVALS LGCIIQCFDW QRIGEELVDM
       481 TEGTGLTLPK AQPLVAKCSP RPKMANLLSQ I

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NAME          D100A-AC3
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 167
      1 CAAAAACAAA ATTCCAATGG TTAACATGTT CACTCCAATT ATATACGCTC CTCTCCTTTT
     61 AGCTTTTTAC ATTATCACAA AACATTTCTT ACGCAAACTC AGAAATAACC CACCAGCTCC
    121 ATTTCTTACT TTCCCCTTTA TTGGCCATCT TTATCTCTTC AAAAAACCAC TTCAACGTAC
    181 CTTAGCCAAA ATCTCCGAAC GTTATGGCTC TGTTCTTCTA CTCGAATTCG GTTCACGAAA
    241 AGTACTTTTG GTTTCTTCAC CATCTGCAGC TGAAGAATGC TTAACAAAAA ACGATATTAT
    301 TTTCGCGAAT CGTCCTCTTT TGATGGCTGG AAAACATCTT GGATATAATT TTACTTCTTT
    361 GGCTTGGAGT TCGTACGGAG ATCACTGGAG AAATCTTCGT AGGATTACTT CAGTTGAGAT
    421 GTTTTCGACT CATCGTCTTC AAATGCTACA TGGAATTCGT ATTGATGAAG TGAAATCTAT
    481 GGTTAAGAGG CTCAATTCCT CTGCCATAGC TGAAAAATCT GTGGATATGA AGTCTATGTT
    541 TTTTGAGCTG ATGCTCAATG TTATGATGAG GACAATTGCT GGAAAAAGAT ATTACGGTGA
    601 GAATGTGGAG GACATTGAGG AAGCTACGAG ATTCAAAGGT TTGGTGCAAG AGACTTTCAG
    661 GATTGGCGGG GCGACGAATA TTGGCGACTT TTTGCCGGCG TTGAAGTTAT TGGTGAGGAA
    721 ATTGGAGAAA AGTTTAATTG TGTTGCAAGA GAACAGAGAT GAGTTTATGC AGGAATTAAT
    781 TAAAGATTGC AGAAAAAGAA TGGAGAAAGA AGGTACTGTT ACTGATTCAG AAATTGAAGG
    841 GAACAAGAAA TGTTTAATTG AAGTTTTGTT AACACTACAA GAAAATGAAC CGGAATACTA
    901 CAAAGATGAA ATCATCAGAA GCCTTATGCT TGTTCTATTA TCAGCTGGTA CAGATACTTC
    961 AGTTGGGACA ATGGAATGGG CTTTATCATT AATGTTAAAC CACCCTGAAA CTCTGAAGAA
   1021 AGCACAAGCT GAAATTGATG AACATATAGG ACATGAACGT TTAGTGGACG AGTCGGACAT
   1081 CAACAACCTA CCTTACCTAC GTTGTATAAT CAACGAGACA TTCCGAATGT ACCCTGCAGG
   1141 ACCACTACTA GTCCCACACG AGTCGTCAGA GGAAACCACC GTAGGAGGCT ACCGTGTACC
   1201 CGGAGGAACC ATGTTACTTG TGAATTTGTG GGCTATTCAC AATGATCCAA AGCTATGGGA
   1261 TGAACCAAGA AAGTTTAAGC CAGAAAGATT TGAAGGACTA GAAGGTGTTA GAGACGGTTA
   1321 CAAAATGATG CCTTTTGGTT CTGGACGAAG GAGTTGTCCT GGAGAAGGAT TGGCTATTCG
   1381 AATGGTTGCA TTGTCATTGG GATGTATTAT TCAATGCTTT GATTGGCAAC GACTTGGGGA
   1441 AGGATTGGTT GATAAGACTG AAGGAACTGG ACTTACTTTG CCTAAAGCTC AACCTTTAGT
   1501 GGCCAAGTGT AGCCCACGAC CTATAATGGC TAATCTTCTT TCTCAGATTT GAACATAATT
   1561 GGTTTCTACC AAACATCCCC AAACTAGAAT ATTATTATTG GTTACATATA CAATGTAATC
   1621 AATTTTGAAC CATATTATAT CTCAATGTAT TCCTTTTTAA AAAAAAAAA AAAAA

SEQ. ID. NO. 168
      1 MVNMFTPIIY APLLLAFYII TKHFLRKLRN NPPAPFLTFP FIGHLYLFKK PLQRTLAKIS
     61 ERYGSVLLLE FGSRKVLLVS SPSAAEECLT KNDIIFANRP LLMAGKHLGY NFTSLAWSSY
    121 GDHWRNLRRI TSVEMFSTHR LQMLHGIRID EVKSMVKRLN SSAIAEKSVD MKSMFFELML
    181 NVMMRTIAGK RYYGENVEDI EEATRFKGLV QETFRIGGAT NIGDFLPALK LLVRKLEKSL
    241 IVLQENRDEF MQELIKDCRK RMEKEGTVTD SEIEGNKKCL IEVLLTLQEN EPEYYKDEII
    301 RSLMLVLLSA GTDTSVGTME WALSLMLNHP ETLKKAQAEI DEHIGHERLV DESDINNLPY
    361 LRCIINETFR MYPAGPLLVP HESSEETTVG GYRVPGGTML LVNLWAIHND PKLWDEPRKF
    421 KPERFEGLEG VRDGYKMMPF GSGRRSCPGE GLAIRMVALS LGCIIQCFDW QRLGEGLVDK
    481 TEGTGLTLPK AQPLVAKCSP RPIMANLLSQ I
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NAME        D104A-AE8 (69,1755)
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 169
      1 CAACACGCTT ACTATCTCCT AAATCTCCAC TCAAAAACAA AGAAGAGAAA GATTTAAAAC
     61 TAATAATTAT GAAAGAGATG GTGCAAAACA ATATGAGCAC TTCTCTTCTT GAAACTTTAC
    121 AAGCTACGCC CATGATATTC TACTTCATCG TCCCTCTCTT CTGCTTATTC CTTCTCTCCA
    181 AATCTCGCCG TAAACGTTTG CCTCCAGGTC CAACTGGCTG GCCTCTCATT GGTAACATGA
    241 TGATGATGGA CCAGTTAACT CACCGTGGCC TTGCCAAACT AGCCCAAAAA TATGGTGGTG
    301 TTTTTCACCT TAAAATGGGT TATGTTCACA AAATTGTAGT CTCTGGTCCA GACGAAGCTC
    361 GCCAAGTATT ACAGGAACAC GACATCATAT TTTCGAACCG TCCAGCGACC GTAGCCATAA
    421 GTTACCTAAC ATATGACAGG GCAGACATGG CTTTTGCTGA CTATGGACTC TTCTGGCGGC
    481 AGATGAGAAA ACTATGTGTA ATGAAACTCT TCAGCCGCAA ACGAGCTGAG TCATGGGACT
    541 CAGTTCGAGA CGAAGCGGAT TCCATGGTTA GAATTGTAAC AACCAACACA GGCACAGCTG
    601 TTAACTTAGG TGAACTTGTT TTCAGTCTCA CTCGTAATAT TATCTACAGA GCTGCTTTTG
    661 GAACTTGTTC TGAAGATGGA CAAGGCGAGT TCATTAAAAT TATGCAAGAG TTTTCGAAGC
    721 TATTTGGTGC TTTCAATATA GCTGATTTTA TTCCATGGCT AGGGTGGGTT GGTAAGCAGA
    781 GTCTAAATAT TAGACTTGCT AAGGCTAGAG CGTCGCTTGA TGGGTTCATT GATTCGATTA
    841 TTGATGACCA TATTATTAGA AAGAAAGCTT ATGTTAATGG CAAAAATGAT GGAGGTGATC
    901 GAGAAACTGA TATGGTGGAT GAGCTTTTAG CTTTTTACAG TGAGGAAGCA AAAGTAACTG
    961 AGTCCGAAGA TTTGCAGAAT GCTATCAGAC TTACTAAGGA TAATATCAAA GCTATCATCA
   1021 TGGATGTAAT GTTTGGAGGG ACAGAAACAG TGGCTTCTGC AATAGAATGG GCCATGGCAG
   1081 AGCTTATGAG GAGTCCTGAA GATCTTAAAA AGGTACAACA AGAGCTGGCT AACGTTGTTG
   1141 GACTCAACAG AAAAGTTGAA GAATCTGACT TTGAAAAATT AACATACTTA AGATGTTGTC
   1201 TAAAAGAAAC TCTACGACTT CACCCTCCAA TCCCTCTCCT CCTCCATGAG ACCGCCGAGG
   1261 AATCCACCGT CTCCGGCTAC CATATTCCGG CAAAGTCACA TGTTATTATA AATTCATTTG
   1321 CCATTGGGCG TGACAAAAAT TCATGGGAAG ATCCTGAAAC TTATAAACCA TCTAGGTTTC
   1381 TCAAGAAGG TGTACCAGAT TTTAAGGAG GTAATTTTGA GTTTATACCA TTTGGGTCGG
   1441 GTCGGCGGTC TTGCCCCGGT ATGCAACTTG GCTTTATGC ATTGGAAATG GCTGTGGCCC
   1501 ATCTTCTTCA TTGTTTTACT TGGGAATTGC CAGATGGTAT GAAACCAAGT GAGCTTAAAA
   1561 TGGATGATAT TTTTGGACTC ACTGCTCCAA GAGCTAATCG ACTCGTGGCT GTGCCTACTC
   1621 CACGTTTGTT GTGTCCCCTT TATTAATTGA AGAAAAAAGG TGGGGCTTTT ACTTGCATCA
   1681 AAGAGTGGTG CTTGTGATTT TTCCACCTTT TGGTTAAATA TACGAATTAT TATGATATAC
   1741 GAATTCTTGG GCACA

SEQ. ID. NO. 170
      1 MKEMVQNNMS TSLLETLQAT PMIFYFIVPL FCLFLLSKSR RKRLPPGPTG WPLIGNMMMM
     61 DQLTHRGLAK LAQKYGGVFH LKMGYVHKIV VSGPDEARQV LQEHDIIFSN RPATVAISYL
    121 TYDRADMAFA DYGLFWRQMR KLCVMKLFSR KRAESWDSVR DEADSMVRIV TTNTGTAVNL
    181 GELVFSLTRN IIYRAAFGTC SEDGQGEFIK IMQEFSKLFG AFNIADFIPW LGWVGKQSLN
    241 IRLAKARASL DGFIDSIIDD HIIRKKAYVN GKNDGGDRET DMVDELLAFY SEEAKVTESE
    301 DLQNAIRLTK DNIKAIIMDV MFGGTETVAS AIEWAMAELM RSPEDLKKVQ QELANVVGLN
    361 RKVEESDFEK LTYLRCCLKE TLRLHPPIPL LLHETAEEST VSGYHIPAKS HVIINSFAIG
    421 RDKNSWEDPE TYKPSRFLKE GVPDFKGGNF EFIPFGSGRR SCPGMQLGLY ALEMAVAHLL
    481 HCFTWELPDG MKPSELKMDD IFGLTAPRAN RLVAVPTPRL LCPLY
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NAME   D105-AD6
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 171
      1 TGTGCTTGTG AGTGTGGGAG AAGGCCTTCA ATATGGAGAT ACCATATTAC AGCTTAAAAA
     61 TTGCAATTTC TTCATTTGCA ATTATCTTTG TACTAAGATG GGCATGGAAA ATCTTGAATT
    121 ATGTGTGGTT AAAAACCAAAA GAATTGGAGA AATACCTCAG ACAGCAGGGT TTCAAAGGAA
    181 ACTCTTACAA ATTCTTGTTT GGGGATATGA AAGAGATGAA GAAAATGGGT GAAGAAGCTA
    241 TGTCTAAGCC AATCAATTTC TCTCATGACA TGATTTGGCC TAGAGTTATG CCATTCATCC
    301 ACAAAACCAT CACCAATTAT GGTAAGAATT GTATTGTGTG GTTTGGGCCA AGACCAGCAG
    361 TCCTGATCAC AGACCCGGAA CTTGTAAAGG AGGTGCTAAC GAAGAATTTC GTCTATCAGA
    421 AGCCGCTTGG CAATCCACTC ACAAAGTTGG CAGCAACTGG AATTGCAGGC TATGAAACAG
    481 ATAAATGGGC TACACATAGA AGGCTTCTCA ATCCTGCTTT TCACCTTGAC AAGTTGAAGC
    541 ATATGCTACC TGCATTCCAA TTTACTGCTA GTGAGATGTT GAGCAAATTG GAGAAAGTTG
    601 TTTCACCAAA CGGAACAGAG ATAGATGTGT GGCCATATTT ACAAACTTTG ACAAGTGATG
    661 CCATTTCAAG AACTGCGTTT GGAAGTAGTT ATGAAGAAGG AAGAAAGATT TTTGACCTTC
    721 AAAAAGAACA ACTTTCACTA ATTCTAGAAG TTTCACGCAC AATATATATT CCAGGATGGA
    781 GGTTTTTGCC AACGAAAAGG AACAAAAGGA TGAAGCAAAT ATTTAATGAA GTACGAGCAC
    841 TGGTATTTGG AATTATTAAG AAAAGGATGA GTATGATTGA AAATGGAGAA GCACCTGATG
    901 ATTTATTGGG AATATTATTG GCATCCAATT TAAAAGAAAT CCAACAACAT GGAAACAACA
    961 AGAAATTTGG TATGAGTATT GATGAGGTGA TTGAAGAGTG TAAACTCTTC TATTTTGCTG
   1021 GGCAAGAGAC TACTTCATCT TTACTTGTAT GGACTATGAT TTTGTTGTGC AAATATCCTA
   1081 ATTGGCAAGA TAAAGCTAGA GAAGAGGTTT TGCAAGTGTT TGGGAGTAGG GAAGTTGACT
   1141 ATGACAAGTT GAATCAGCTA AAAATAGTAA CTATGATCTT AAACGAGGTC TTAAGGTTGT
   1201 ATCCAGCAGG ATATGTGATT AATCGAATGG TAAACAAAGA AACAAAGTTA GGGAATTTGT
   1261 GTTTACCAGC CGGCGTACAG CTCGTGTTAC CAACAATGTT GTTGCAACAT GATACTGAAA
   1321 TATGGGGAGA TGATGCAATG GAGTTCAATC CAGAGAGATT TAGTGATGGA ATATCCAAAG
   1381 CAACAAAAGG AAAACTTGTG TTTTTTCCAT TTAGTTGGGG TCCAAGAATA TGTATTGGGC
   1441 AAAATTTTGC TATGTTAGAG GCTAAAATGG CAATGGCTAT GATTCTGAAA ACCTATGCAT
   1501 TTGAACTCTC TCCATCTTAT GCTCATGCTC CTCATCCACT ACTACTTCAA CCTCAATATG
   1561 GTGCTCAATT AATTTTGTAC AAGTTGTAGA TATGGTCAAT TTGGAACTTG TTATGGAACT
   1621 TTTATCATTG TAATCAACCA TATTGAGGGA ACATGGTTTG AGGTTAAATC CTCGTGTGTG
   1681 TGTC

SEQ. ID. NO. 172
      1 MEIPYYSLKI AISSFAIIFV LRWAWKILNY VWLKPKELEK YLRQQGFKGN SYKFLFGDMK
     61 EMKKMGEEAM SKPINFSHDM IWPRVMPFIH KTITNYGKNC IVWFGPRPAV LITDPELVKE
    121 VLTKNFVYQK PLGNPLTKLA ATGIAGYETD KWATHRRLLN PAFHLDKLKH MLPAFQFTAS
    181 EMLSKLEKVV SPNGTEIDVW PYLQTLTSDA ISRTAFGSSY EEGRKIFDLQ KEQLSLILEV
    241 SRTIYIPGWR FLPTKRNKRM KQIFNEVRAL VFGIIKKRMS MIENGEAPDD LLGILLASNL
    301 KEIQQHGNNK KFGMSIDEVI EECKLFYFAG QETTSSLLVW TMILLCKYPN WQDKAREEVL
    361 QVFGSREVDY DKLNQLKIVT MILNEVLRLY PAGYVINRMV NKETKLGNLC LPAGVQLVLP
    421 TMLLQHDTEI WGDDAMEFNP ERFSDGISKA TKGKLVFFPF SWGPRICIGQ NFAMLEAKMA
    481 MAMILKTYAF ELSPSYAHAP HPLLLQPQYG AQLILYKL

NAME   D109-AH8 (14,1697)
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 173
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     1 CCAGCACCAA GACATGGAGA ATTCCTGGGT AGTTTTAGCC TTAACAGGCC TTCTTACATT
    61 AGTTTTTCTC TCAAAGTTTC TTCATAGTCC TCGTCGTAAA CAAAATCTTC CACCAGGTCC
   121 AAAACCATGG CCTATTGTTG GCAATATACA TCTTCTTGGT TCCACCCCTC ACAGATCCCT
   181 TCACGAACTT GCAAAAAGAT ACGGAGATTT AATGCTACTA AAGTTCGGTT CGCGCAATGT
   241 CCTTATTTTA TCCTCCCCAG ATATGGCTAG AGAATTCTTG AAAACAAATG ATGCCATTTG
   301 GGCTTCTCGC CCTGAGCTTG CCGCTGGTAA ATATACTGCT TATAATTATT GCGACATGAC
   361 ATGGGCACGT TATGGACCCT TTTGGAGACA AGCAAGGAGG ATCTATCTCA ACGAGATTTT
   421 CAATCCTAAA CGTTTGGATT CATTTGAGTA CATTCGCATA GAGGAAAGGC ATAATTTGAT
   481 TTCACGTCTT TTTGTTCTCT CTGGGAAGCC AATTCTTCTT AGAGACCATT TAACTCGGTA
   541 CACTCTTACA AGTATAAGTA GAACAGTATT GAGTGGAAAA TATTTTAGCG AGTCACCTGG
   601 CCAAAATTCA ATGATAACTT TGAAACAATT GCAGGATATG CTTGATAAGT GGTTTTTGCT
   661 TAATGGTGTG ATCAATATTG GGGACTGGAT ACCTTGGCTT GCTTTCTTGG ATTTGCAGGG
   721 TTATGTCAAG CAAATGAAGG AGTTGCATAG GAACTTCGAC AAATTTCATA ACTTTGTGCT
   781 AGATGATCAC AAGGCTAATA GGGGAGAGAA GAACTTTGTG CCAAGAGACA TGGTCGATGT
   841 TTTGCTGCAG CAAGCTGAGG ATCCTAATCT TGAGGTCAAA CTCACCAATG ATTGTGTCAA
   901 GGGTCTAATG CAGGACTTAT TGGCTGGCGG CACGGACACC TCAGCAACAA CCGTTGAATG
   961 GGCTTTTTAT GAACTTCTTA GACAACCTAA GATTATGAAG AAAGCACAAC AAGAGCTAGA
  1021 CCTTGTCATT TCACAGGACA GATGGGTTCA AGAAAAAGAT TACACTCAAC TCCCTTACAT
  1081 TGAGTCAATC ATCAAGGAAA CATTGAGGCT TCACCCAGTA AGCACCATGC TTCCACCGCG
  1141 CATTGCCTTG GAGGATTGTC ATGTAGCAGG CTATGACATA CCTAAAGGTA CAATTTTAAT
  1201 TGTGAACACT GGAGTATTG GAAGAAATTC ACAGCATTGG GAGTCACCAG AAGAATTCCT
  1261 TCCGGAGAGG TTTGAAGGGA AGAATATTGG TGTCACAGGA CAACATTTTG CGCTCTTGCC
  1321 ATTTGGCGCG GGCCGGAGAA AGTGCCCAGG ATACAGTCTT GGGATTCGTA TAATTAGGGC
  1381 AACTTTAGCT AACTTGTTGC ATGGATTCAA CTGGAGATTG CCTAATGGTA TGAGTCCAGA
  1441 AGACATTAGC ATGGAAGAGA TTTATGGGCT AATTACACAC CCCAAAGTCG CACTTGACGT
  1501 GATGATGGAG CCTCGACTTC CCAACCATCT TTACAAATAG TGGATAATTA AAACCATTAA
  1561 AATCGTTTTG TTATATGCAT GTCTCATATT TGTAGTGGTC AAAATGTTTG TTTTCTATCA
  1621 TGGATGTTCA GTGCGAGGTT GGGAATTTCA AGTCATTAAC GTGTGAAAAT ATTTTAAATT
  1681 TAAAAAAAAA AAAAAAA
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SEQ. ID. NO. 174
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     1 MENSWVVLAL TGLLTLVFLS KFLHSPRRKQ NLPPGPKPWP IVGNIHLLGS TPHRSLHELA
    61 KRYGDLMLLK FGSRNVLILS SPDMAREFLK TNDAIWASRP ELAAGKYTAY NYCDMTWARY
   121 GPFWRQARRI YLNEIFNPKR LDSFEYIRIE ERHNLISRLF VLSGKPILLR DHLTRYTLTS
   181 ISRTVLSGKY FSESPGQNSM ITLKQLQDML DKWFLLNGVI NIGDWIPWLA FLDLQGYVKQ
   241 MKELHRNFDK FHNFVLDDHK ANRGEKNFVP RDMVDVLLQQ AEDPNLEVKL TNDCVKGLMQ
   301 DLLAGGTDTS ATTVEWAFYE LLRQPKIMKK AQQELDLVIS QDRWVQEKDY TQLPYIESII
   361 KETLRLHPVS TMLPPRIALE DCHVAGYDIP KGTILIVNTW SIGRNSQHWE SPEEFLPERF
   421 EGKNIGVTGQ HFALLPFGAG RRKCPGYSLG IRIIRATLAN LLHGFNWRLP NGMSPEDISM
   481 EEIYGLITHP KVALDVMMEP RLPNHLYK
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NAME        D110-AF12 (166,1631)
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 175
      1 ACTGTTCAAA TCACAGTAAC AGCATCTTGT GCTGCCATAA TAATTACTCT AGTGGTGTGT
     61 ATATGGAGAG TGCTGAATTG GGTTTGGTTC AGACCAAAGA AGCTGGAAAA GCTACTGAGG
    121 AAACAAGGTC TCAAAGGCAA TTCCTACAGG ATTTTGTATG GGGATATGAA GGAGCTTTCT
    181 GGTATGATTA AGGAAGCTAA CTCCAAACCC ATGAATCTTT CTGATGATAT TGCCCCAAGA
    241 TTGGTCCCTT TCTTTCTTGA TACCATCAAG AAATATGGGA AAAAATCCTT TGTATGGTTG
    301 GGTCCAAAAC CGCTGGTTTT TGTCATGGAC CCCGAGCTTA TAAAGGAAGT ATTCTCCAAA
    361 AACTATCTGT ATCAAAAGCC TCATTCAAAT CCATTAACCA AGTTACTGGC ACAAGGACTT
    421 GTAAGCCAAG AGGAAGACAA ATGGGCCAAA CATAGAAAAA TCGTCACTCC TGCCTTCCAC
    481 CTGGAGAAGC TAAAGCATAT GCTTCCAGCT TTTTGTTTGA GCTGTACTGA GATGCTGAGC
    541 AAATGGGAAG ACATTGTTGC AGTTGAGGGC TCACATGAGA TAGATATATG GCCTGGCCTT
    601 CAACAATTAA CTAGTGATGT GATCTCTCGG ACAGCCTTTG GCAGTAGCTA TGAAGCAGGT
    661 AGAAGGATAT TTGAACTTCA AAAGGAACAA GCTCAATTTC TTATGGAAGC TATACGCTCC
    721 GTTTATATTC CAGGCTGGAG GTTTTTGCCA ACAAAGAGGA ACAGAAGAAT GAAGGAAATT
    781 GAAAAGGATG TTCAAGCCTT AGTTAGAGGT ATTATTGATA AAGAGTAAA GTCAATGAAA
    841 GCAGGAGAGG TGAATAATGA GGATCTGCTT GGTATATTGC TGGAATCTAA TTTTAAAGAA
    901 ATTGAACAGC ATGGAAACAA GGATTTTGGA ATGAGCATTG AAGAAGTCAT TCAAGAATGC
    961 AAGTTATTCT ATTTTGCTGG CCAAGAAACT ACATCAGTGT TGCTTGTATG GACTCTAATA
   1021 TTGCTGAGCA GGCATCAGGA TTGGCAAGCA CTGGCCAGAG AAGAGGTGTT GCAAGTCTTT
   1081 GGGAATCAGA AACCAGATTT TGATGGATTA AATCGTCTAA AAATTGTTAC AATGATCTTG
   1141 TACGAGTCTT TAAGGCTCTA TCCCCCAGTA GTGACACTTA CCCGAAGGCC TAAGGAAGAC
   1201 ACTGTATTAG GAGATGTATC TCTACCAGCA GGTGTGTTAA TCTCCTTACC AGTGATCTTA
   1261 TTGCATCACG ACGAAGAGAT ATGGGGTAAA GATGCAAAGA AGTTCAAGCC AGAGAGATTC
   1321 AGAGATGGAG TCTCAAGTGC AACAAAGGGT CAAGTCACTT TTTTCCCATT TACTTGGGGT
   1381 CCCAGAATAT GCATTGGACA AAATTTTGCC ATGTTAGAAG CAAAGACTAC TTTGGCTATG
   1441 ATCCTACAAC GCTTCTCCTT TGAACTGTCT CCATCTTATG CACATGCTCC TCAGTCCATA
   1501 ATAACTTTGC AACCCCAGTA TGGTGCTCCA CTTATTTTGC ATAAAATATA GTTTATTACT
   1561 TGTAAGTAGT GTCTCGTTTT ATGTTAAGCA TGAGTCCAAA ATGTTAAGGC TTGTAGAACT
   1621 GCAAATGGG A

SEQ. ID. NO. 176
      1 MKELSGMIKE ANSKPMNLSD DIAPRLVPFF LDTIKKYGKK SFVWLGPKPL VFVMDPELIK
     61 EVFSKNYLYQ KPHSNPLTKL LAQGLVSQEE DKWAKHRKIV TPAFHLEKLK HMLPAFCLSC
    121 TEMLSKWEDI VAVEGSHEID IWPGLQQLTS DVISRTAFGS SYEAGRRIFE LQKEQAQFLM
    181 EAIRSVYIPG WRFLPTKRNR RMKEIEKDVQ ALVRGIIDKR VKSMKAGEVN NEDLLGILLE
    241 SNFKEIEQHG NKDFGMSIEE VIQECKLFYF AGQETTSVLL VWTLILLSRH QDWQALAREE
    301 VLQVFGNQKP DFDGLNRLKI VTMILYESLR LYPPVVTLTR RPKEDTVLGD VSLPAGVLIS
    361 LPVILLHHDE EIWGKDAKKF KPERFRDGVS SATKGQVTFF PFTWGPRICI GQNFAMLEAK
    421 TTLAMILQRF SFELSPSYAH APQSIITLQP QYGAPLILHK I
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NAME          D112-AA5
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 177
       1 ATTTATCTCT GAAAATGCAA TTCTTCAGCT TGGTTTCCAT TTTCCTATTC CTATCTTTCC
      61 TATTTTTGTT GAGGAAATGG AAGAACTCCA ATAGCCAAAG CAAAAAATTG CCACCAGGTC
     121 CATGGAAAAT ACCAATACTA GGAAGTATGC TTCATATGAT TGGTGGAGAA CCGCACCATG
     181 TCCTTAGAGA TTTAGCCAAA AAAGATGGAC CACTTATGCA CCTTCAGTTA GGTGAAATTT
     241 CTGCAGTTGT GGTTACTTCT AGGGACATGG CAAAAGAAGT GCTAAAAACT CATGACGTCG
     301 TTTTTGCATC TAGGCCTAAA ATTGTAGCCA TGGACATTAT CTGTTATAAC CAGTCCGACA
     361 TTGCCTTTAG CCCTTATGGC GACCACTGGA GACAAATGCG TAAAATTTGT GTCATGGAAC
     421 TTCTCAATGC AAAGAATGTT CGGTCTTTCA GCTCCATCAG ACGTGATGAA GTCGTTCGTC
     481 TCATTGACTC TATCCGGTCA GATTCTTCTT CAGGTGAGCT AGTTAATTTT ACGCAGAGGA
     541 TCATTTGGTT TGCAAGCTCC ATGACGTGTA GATCAGCATT TGGGCAAGTA CTCAAGGGGC
     601 AAGACATATT TGCCAAAAAG ATCAGAGAAG TAATAGGATT AGCAGAAGGC TTTGATGTGG
     661 TAGACATCTT CCCTACATAC AAGTTTCTTC ATGTTCTCAG TGGGATGAAG CGTAAACTTT
     721 TGAATGCCCA CCTTAAGGTA GACGCCATTG TTGAGGATGT CATCAACGAG CACAAGAAAA
     781 ATCTTGCAGC TGGCAAGAGT AATGGCGCAT TAGGAGGCGA AGATCTAATT GATGTCCTAC
     841 TGAGACTTAT GAATGACACA AGTCTTCAAT TTCCCATCAC CAACGACAAT ATCAAAGCTG
     901 TTGTTGTTGA CATGTTTGCT GCCGGAACAG AAACTTCATC AACAACAACT GTATGGGCCA
     961 TGGCTGAAAT GATGAAGAAT CCAAGTGTAT TCGCCAAAGC TCAAGCAGAA GTGCGAGAAG
    1021 CCTTTAGGGA CAAAGTATCT TTTGATGAAA ATGATGTGGA GGAGCTGAAA TACTTAAAGT
    1081 TAGTCATTAA AGAAACTTTG AGACTTCATC CACCGTCTCC ACTTTTGGTC CCAAGAGAAT
    1141 GCAGGGAAGA TACGGATATA AACGGCTACA CTATTCCTGC AAAGACCAAA GTTATGGTTA
    1201 ATGTTTGGGC ATTGGGAAGA GATCCAAAAT ATTGGGATGA CGCGGAAAGC TTTAAGCCAG
    1261 AGAGATTTGA GCAATGTTCT GTAGATATTT TTGGTAATAA TTTTGAGTTT CTTCCCTTTG
    1321 GCGGGGGACG GAGAATTTGT CCTGGAATGT CATTTGGTTT AGCTAATCTT TACTTACCAT
    1381 TGGCTCAATT ACTCTATCAC TTTGACTGGA AACTCCCAAC CGGAATCAAG CCAAGAGACT
    1441 TGGACTTGAC CGAATTATCG GGAATAACTA TTGCTAGAAA GGGTGACCTT TACTTAAATG
    1501 CTACTCCTTA TCAACCTTCT CGAGAGTAAT TTACTATTGG CATAAACATT TTAAATTTCC
    1561 TTCATCAACC TC
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SEQ. ID. NO. 178
       1 MQFFSLVSIF LFLSFLFLLR KWKNSNSQSK KLPPGPWKIP ILGSMLHMIG GEPHHVLRDL
      61 AKKDGPLMHL QLGEISAVVV TSRDMAKEVL KTHDVVFASR PKIVAMDIIC YNQSDIAFSP
     121 YGDHWRQMRK ICVMELLNAK NVRSFSSIRR DEVVRLIDSI RSDSSSGELV NFTQRIIWFA
     181 SSMTCRSAFG QVLKGQDIFA KKIREVIGLA EGFDVVDIFP TYKFLHVLSG MKRKLLNAHL
     241 KVDAIVEDVI NEHKKNLAAG KSNGALGGED LIDVLLRLMN DTSLQFPITN DNIKAVVVDM
     301 FAAGTETSST TTVWAMAEMM KNPSVFAKAQ AEVREAFRDK VSFDENDVEE LKYLKLVIKE
     361 TLRLHPPSPL LVPRECREDT DINGYTIPAK TKVMVNVWAL GRDPKYWDDA ESFKPERFEQ
     421 CSVDIFGNNF EFLPFGGGRR ICPGMSFGLA NLYLPLAQLL YHFDWKLPTG IKPRDLDLTE
     481 LSGITIARKG DLYLNATPYQ PSRE
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NAME        D120-AH4
 ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 179
    1 ATAATGCTTT CTCCCATAGA AGCCATTGTA GGACTAGTAA CCTTCACATT TCTCTTCTTC
   61 TTCCTATGGA CAAAAAAATC TCAAAAACCT TCAAAACCCT TACCACCGAA AATCCCCGGA
  121 GGATGGCCGG TAATCGGCCA TCTTTTCCAC TTCAATGACG ACGGCGACGA CCGTCCATTA
  181 GCTCGAAAAC TCGGAGACTT AGCTGACAAA TACGGCCCCG TTTTCACTTT TCGGCTAGGC
  241 CTTCCCCTTG TCTTAGTTGT AAGCAGTTAC GAAGCTGTAA AAGACTGTTT CTCTACAAAT
  301 GACGCCATTT TTTCCAATCG TCCAGCTTTT CTTTACGGCG ATTACCTTGG CTACAATAAT
  361 GCCATGCTAT TTTTGGCCAA TTACGGACCT TACTGGCGAA AAAATCGAAA ATTAGTTATT
  421 CAGGAAGTTC TCTCCGCTAG TCGTCTCGAA AAATTCAAAC ACGTGAGATT TGCAAGAATT
  481 CAAGCGAGCA TTAAGAATTT ATATACTCGA ATTGATGGAA ATTCGAGTAC GATAAATTTA
  541 ACTGATTGGT TAGAAGAATT GAATTTTGGT CTGATCGTGA AGATGATCGC TGGAAAAAAT
  601 TATGAATCCG GTAAAGGAGA TGAACAAGTG GAGAGATTTA AGAAAGCGTT TAAGGATTTT
  661 ATGATTTTAT CAATGGAGTT TGTGTTATGG GATGCATTTC CAATTCCATT ATTTAAATGG
  721 GTGGATTTTC AAGGGCATGT TAAGGCTATG AAAAAGAGAAA TTAAAGATAT AGATTCTGTT
  781 TTTCAGAATT GGTTAGGGGA ACATATTAAT AAAAGAGAAA AAATGGAGGT TAATGCAGAA
  841 GGGAATGAAC AAGATTTCAT TGATGTGGTG CTTTCAAAAA TGAGTAATGA ATATCTTGGT
  901 GAAGGTTACT CTCGTGATAC TGTCATTAAA GCAACGGTGT TTAGTTTGGT CTTGGATGCA
  961 GCAGACACAG TTGCTCTTCA CATAAATTGG GGAATGGCAT TATTGATAAA CAATCAAAAG
 1021 GCCTTGACGA AAGCACAAGA AGAGATAGAC ACAAAAGTTG GTAAGGACAG ATGGGTAGAA
 1081 GAGAGTGATA TTAAGGATTT GGTATACCTC CAAGCTATTG TTAAAGAAGT GTTACGATTA
 1141 TATCCACCAG GACCTTTGTT AGTACCACAC GAAAATGTAG AAGATTGTGT TGTTAGTGGA
 1201 TATCACATTC CTAAAGGGAC AAGATTATTC GCAAACGTCA TGAAACTGCT ACGTGATCCT
 1261 AAACTCTGGC CTGATCCTGA TACTTTCGAT CCAGAGAGAT TCATTGCTAC TGATATTGAC
 1321 TTTCGTGGTC AGTACTATAA GTATATCCCG TTGGTTCTG GAAGACGATC TTGTCCAGGG
 1381 ATGACTTATG CATTGCAAGT GGAACACTTA ACAATGGCAC ATTTGATCCA AGGTTTCAAT
 1441 TACAGAACTC CAAATGACGA GCCCTTGGAT ATGAAGGAAG GTGCAGGCAT AACTATACGT
 1501 AAGGTAAATC CTGTGGAACT GATAATAGCG CCTCGCCTGG CACCTGAGCT TTATTAAAAC
 1561 CTAAGATCTT TCATCTTGGT TGATCATTGT ATAATACTCC TAAATGGATA TTCATTTACC
 1621 TTTTATCAAT TAA

SEQ. ID. NO. 180
    1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
   61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
  121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
  181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDFM ILSMEFVLWD AFPIPLFKWV
  241 DFQGHVKAMK RTFKDIDSVF QNWLGEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
  301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
  361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVMKLLRDPK
  421 LWPDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
  481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
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NAME          D121-AA8
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 181
       1 AATCCATAAT GCTTTCTCCC ATAGAAGCCA TTGTAGGACT AGTAACCTTC ACATTTCTCT
      61 TCTTCTTCCT ATGGACAAAA AAATCTCAAA AACCTTCAAA ACCCTTACCA CCGAAAATCC
     121 CCGGAGGATG GCCGGTAATC GGCCATCTTT TCCACTTCAA TGACGACGGC GACGACCGTC
     181 CATTAGCTCG AAAACTCGGA GACTTAGCTG ACAAATACGG CCCCGTTTTC ACTTTTCGGC
     241 TAGGCCTTCC CCTTGTCTTA GTTGTAAGCA GTTACGAAGC TGTAAAAGAC TGTTTCTCTA
     301 CAAATGACGC CATTTTTTCC AATCGTCCAG CTTTTCTTTA CGGCGATTAC CTTGGCTACA
     361 ATAATGCCAT GCTATTTTTG GCCAATTACG GACCTTACTG GCGAAAAAAT CGAAAATTAG
     421 TTATTCAGGA AGTTCTCTCC GCTAGTCGTC TCGAAAAATT CAAACACGTG AGATTTGCAA
     481 GAATTCAAGC GAGCATTAAG AATTTATATA CTCGAATTGA TGGAAATTCG AGTACGATAA
     541 ATTTAACTGA TTGGTTAGAA GAATTGAATT TTGGTCTGAT CGTGAAGATG ATCGCTGGAA
     601 AAAATTATGA ATCCGGTAAA GGAGATGAAC AAGTGGAGAG ATTTAAGAAA GCGTTTAAGG
     661 ATTTTATGAT TTTATCAATG GAGTTTGTGT TATGGGATGC ATTTCCAATT CCATTATTTA
     721 AATGGGTGGA TTTTCAAGGG CATGTTAAGG CTATGAAAAG GACTTTTAAA GATATAGATT
     781 CTGTTTTTCA GAATTGGTTA GAGGAACATA TTAATAAAAG AGAAAAAATG GAGGTTAATG
     841 CAGAAGGGAA TGAACAAGAT TTCATTGATG TGGTGCTTTC AAAAATGAGT AATGAATATC
     901 TTGGTGAAGG TTACTCTCGT GATACTGTCA TTAAAGCAAC GGTGTTTAGT TTGGTCTTGG
     961 ATGCAGCAGA CACAGTTGCT CTTCACATAA ATTGGGGAAT GGCATTATTG ATAAACAATC
    1021 AAAAGGCCTT GACGAAAGCA CAAGAAGAGA TAGACACAAA AGTTGGTAAG GACAGATGGG
    1081 TAGAAGAGAG TGATATTAAG GATTTGGTAT ACCTCCAAGC TATTGTTAAA GAAGTGTTAC
    1141 GATTATATCC ACCAGGACCT TTGTTAGTAC CACACGAAAA TGTAGAAGAT TGTGTTGTTA
    1201 GTGGATATCA CATTCCTAAA GGGACAAGAT TATTCGCAAA CGTCATGAAA CTGCAACGTG
    1261 ATCCTAAACT CTGGTCTGAT CCTGATACTT TCGATCCAGA GAGATTCATT GCTACTGATA
    1321 TTGACTTTCG TGGTCAGTAC TATAAGTATA TCCCGTTTGG TTCTGGAAGA CGATCTTGTC
    1381 CAGGGATGAC TTATGCATTG CAAGTGGAAC ACTTAACAAT GGCACATTTG ATCCAAGGTT
    1441 TCAATTACAG AACTCCAAAT GACGAGCCCT GGATATGAAG GAAGGTGCAG GCATAACTA
    1501 TACGTAAGGT AAATCCTGTG GAACTGATAA TAGCGCCTCG CCTGGCACCT GAGCTTTATT
    1561 AAAACCTAAG ATCATCTTGC TTGAT
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SEQ. ID. NO. 182
       1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
      61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
     121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
     181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDFM ILSMEFVLWD AFPIPLFKWV
     241 DFQGHVKAMK RTFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
     301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
     361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVMKLQRDPK
     421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCFGM TYALQVEHLT MAHLIQGFNY
     481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
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NAME   D122-AF10
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 183
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     1 CTAAAACTCC ATAATGGTTT CTCCCGTAGA AGCCATTGTA GGACTAGTAA CCCTTACACT
    61 TCTCTTCTAC TTCCTATGGC CCAAAAAATT TCAAATACCT TCAAAACCAT TACCACCGAA
   121 AATTCCCGGA GGGTGGCCGG TAATCGGCCA TCTTTTCTAC TTCGATGATG ACGGCGACGA
   181 CCGTCCATTA GCTCGAAAAC TCGGAGACTT AGCTGACAAA TACGGCCCGG TTTTCACTTT
   241 CCGGCTAGGC CTTCCGCTTG TGTTAATTGT AAGCAGTTAC GAAGCTGTAA AAGACTGCTT
   301 CTCTACAAAT GACGCCATTT TCTCCAATCG TCCAGCTTTT CTTTACGGTG AATACCTTGG
   361 CTACAATAAT GCCATGCTAT TTTTGACAAA ATACGGACCT TATTGGCGAA AAAATAGAAA
   421 ATTAGTCATT CAGGAAGTTC TCTCTGCTAG TCGTCTCGAA AAATTGAAGC ACGTGAGATT
   481 TGGTAAAATT CAAACGAGCA TTAAGAGTTT ATACACTCGA ATTGATGGAA ATTCGAGTAC
   541 GATAAATCTA ACTGATTGGT TAGAAGAATT GAATTTTGGT CTGATCGTGA AAATGATCGC
   601 TGGGAAAAAT TATGAATCCG GTAAAGGAGA TGAACAAGTG GAGAGATTTA GGAAAGCGTA
   661 TAAGGATTTT ATAATTTTAT CAATGGAGTT TGTGTTATGG GATGCTTTTC CAATTCCATT
   721 GTTCAAATGG GTGGATTTTC AAGGCTATGT TAAGGCCATG AAAAGGACAT TTAAGGATAT
   781 AGATTCTGTT TTTCAGAATT GGTTAGAGGA ACATGTCAAG AAAAGAGAAA AAATGGAGGT
   841 TAATGCACAA GGGAATGAAC AAGATTTCAT TGATGTGGTG CTTTCAAAAA TGAGTAATGA
   901 ATATCTTGAT GAAGGTTACT CTCGTGATAC TGTCATAAAA GCAACAGTGT TTAGTTTGGT
   961 CTTGGATGCT GCGGACACAG TTGCTCTTCA CATGAATTGG GGAATGGCAT TACTGATAAA
  1021 CAATCAACAT GCCTTGAAGA AAGCACAAGA AGAGATCGAT AAGAAAGTTG GTAAGGAAAG
  1081 ATGGGTAGAA GAGAGTGATA TTAAGGATTT GGTCTACCTC CAAGCTATTG TTAAAGAAGT
  1141 GTTACGATTA TATCCACCAG GACCTTTATT AGTACCTCAT GAAAATGTAG AGGATTGTGT
  1201 TGTTAGTGGA TATCACATTC CTAAAGGGAC TAGACTATTC GCGAACGTTA TGAAATTGCA
  1261 GCGCGATCCT AAACTCTGGT CAAATCCTGA TAAGTTTGAT CCAGAGAGAT CTTCGCTGA
  1321 TGATATTGAC TACCGTGGTC AGCACTATGA GTTTATCCCA TTTGGTTCTG GAAGACGATC
  1381 TTGTCCGGGG ATGACTTATG CATTACAAGT GGAACACCTA ACAATAGCAC ATTTGATCCA
  1441 GGGTTTCAAT TACAAAACTC CAAATGACGA GCCCTTGGAT ATGAAGGAAG TGCAGGATT
  1501 AACTATACGT AAAGTAAATC CTGTAGAAGT GACAATTACG GCTCGCCTGG CACCTGAGCT
  1561 TTATTAAAAC CTTAGATGTT TTATCTTGAT TGTACTAATA TATATATGCA GAAAAAATTG
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SEQ. ID. NO. 184
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     1 MVSPVEAIVG LVTLTLLFYF LWPKKFQIPS KPLPPKIPGG WPVIGHLFYF DDDGDDRPLA
    61 RKLGDLADKY GPVFTFRLGL PLVLIVSSYE AVKDCFSTND AIFSNRPAFL YGEYLGYNNA
   121 MLFLTKYGPY WRKNRKLVIQ EVLSASRLEK LKHVRFGKIQ TSIKSLYTRI DGNSSTINLT
   181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFRKAYKDFI ILSMEFVLWD AFPIPLFKWV
   241 DFQGYVKAMK RTFKDIDSVF QNWLEEHVKK REKMEVNAQG NEQDFIDVVL SKMSNEYLDE
   301 GYSRDTVIKA TVFSLVLDAA DTVALHMNWG MALLINNQHA LKKAQEEIDK KVGKERWVEE
   361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVMKLQRDPK
   421 LWSNPDKFDP ERFFADDIDY RGQHYEFIPF GSGRRSCPGM TYALQVEHLT IAHLIQGFNY
   481 KTPNDEPLDM KEGAGLTIRK VNPVEVTITA RLAPELY
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NAME   D128-AB7
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 185
      1 CGAGGCTCCC CACCAAAAAA TCATTTCTCT CGTCTAAAAT GGATCTTCTC TTACTAGAGA
     61 AGACCTTAAT TGGTCTTTTC TTTGCCATTT TAATCGCTTT AATTGTCTCT AAACTTCGTT
    121 CAAAGCGTTT TAAGCTTCCT CCAGGACCAA TTCCAGTACC AGTTTTTGGT AATTGGCTTC
    181 AAGTTGGTGA TGATTTAAAC CACAGAAATC TTACTGATTA TGCCAAAAAA TTTGGCGATC
    241 TTTTCTTGTT AAGAATGGGT CAACGTAACT TAGTTGTTGT GTCATCTCCT GAATTAGCTA
    301 AAGAAGTTTT ACACACACAA GGTGTTGAAT TTGGTTCAAG AACAAGAAAT GTTGTGTTTG
    361 ATATTTTTAC TGGAAAAGGT CAAGATATGG TTTTTACTGT ATATGGTGAA CATTGGAGAA
    421 AAATGAGGAG AATTATGACT GTACCATTTT TTACTAATAA AGTTGTGCAA CAGTATAGAG
    481 GGGGGTGGGA GTTTGAGGTG GCAAGTGTAA TTGAGGATGT GAAAAAAAAT CCTGAATCTG
    541 CTACTAATGG GATCGTATTA AGGAGGAGAT TACAATTAAT GATGTATAAT AATATGTTTA
    601 GGATTATGTT TGATAGGAGA TTTGAGAGTG AAGATGATCC TTTGTTTGTT AAGCTTAAGG
    661 CTTTGAATGG TGAAAGGAGT AGATTGGCTC AAAGTTTTGA GTATAATTAT GGTGATTTTA
    721 TTCCAATTTT GAGGCCTTTT TTGAGAGGTT ATTTGAAGAT CTGTAAAGAA GTTAAGGAGA
    781 AGAGGCTGCA GCTTTTCAAA GATTACTTTG TTGATGAAAG AAAGAAGCTT TCAAATACCA
    841 AGAGCTCGGA CAGCAATGCC CTAAAATGTG CGATTGATCA CATTCTTGAG GCTCAACAGA
    901 AGGGAGAGAT CAATGAGGAC AACGTTCTTT ACATTGTTGA AAACATCAAT GTTGCTGCAA
    961 TTGAAACAAC ATTATGGTCA ATTGAGTGGG GTATCGCCGA GCTAGTCAAC CACCCTCACA
   1021 TCCAAAAGAA ACTGCGCGAC GAGATTGACA CAGTTCTTGG ACCAGGAGTG CAAGTGACTG
   1081 AACCAGACAC CCACAAGCTT CCATACCTTC AGGCTGTGAT CAAGGAGGCA CTTCGTCTCC
   1141 GTATGGCAAT TCCTCTATTA GTCCCACACA TGAACCTTCA CGACGCAAAG CTTGGCGGGT
   1201 TTGATATTCC AGCAGAGAGC AAAATCTTGG TTAACGCTTG GTGGTTAGCT AACAACCCGG
   1261 CTCATTGGAA GAAACCCGAA GAGTTCAGAC CCGAGAGGTT CTTTGAAGAG GAGAAGCATG
   1321 TTGAGGCCAA TGGCAATGAC TTCAGATATC TTCCGTTTGG CGTTGGTAGG AGGAGCTGCC
   1381 CTGGAATTAT ACTTGCATTG CCAATTCTTG GCATCACTTT GGGACGTTTG GTTCAGAACT
   1441 TTGAGCTGTT GCCTCCTCCA GGCCAGTCGA AGCTCGACAC CACAGAGAAA GGTGGACAGT
   1501 TCAGTCTCCA CATTTTGAAG CATTCCACCA TTGTGTTGAA ACCAAGGTCT TTCTGAACTT
   1561 TGTGATCTTA TTAATTAAGG GGTTCTGAAG AAATTTGATA GTGTTGGATA TTAAGGGCGA
   1621 ATT

SEQ. ID. NO. 186
      1 MDLLLLEKTL IGLFFAILIA LIVSKLRSKR FKLPPGPIPV PVFGNWLQVG DDLNHRNLTD
     61 YAKKFGDLFL LRMGQRNLVV VSSPELAKEV LHTQGVEFGS RTRNVVFDIF TGKGQDMVFT
    121 VYGEHWRKMR RIMTVPFFTN KVVQQYRGGW EFEVASVIED VKKNPESATN GIVLRRRLQL
    181 MMYNNMFRIM FDRRFESEDD PLFVKLKALN GERSRLAQSF EYNYGDFIPI LRPFLRGYLK
    241 ICKEVKEKRL QLFKDYFVDE RKKLSNTKSS DSNALKCAID HILEAQQKGE INEDNVLYIV
    301 ENINVAAIET TLWSIEWGIA ELVNHPHIQK KLRDEIDTVL GPGVQVTEPD THKLPYLQAV
    361 IKEALRLRMA IPLLVPHMNL HDAKLGGFDI PAESKILVNA WWLANNPAHW KKPEEFRPER
    421 FFEEEKHVEA NGNDFRYLPF GVGRRSCPGI ILALPILGIT LGRLVQNFEL LPPPGQSKLD
    481 TTEKGGQFSL HILKHSTIVL KPRSF

NAME   D129-AD10
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 187

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   1 CAACACGCTT ACTATCTCCT AAATCTCCAC TCAAAAACAA AGAAGAGAAA GATTTAAAAC
  61 TAATAATTAT GAAAGAGATG GTGCAAAACA ATATGAGCAC TTCTCTTCTT GAAACTTTAC
 121 AAGCTACGCC CATGATATTC TACTTCATCG TCCCTCTCTT CTGCTTATTC CTTCTCTCCA
 181 AATCTCGCCG TAAACGTTTG CCTCCAGGTC CAACTGGCTG GCCTCTCATT GGTAACATGA
 241 TGATGATGGA CCAGTTAACT CACCGTGGCC TTGCCAAACT AGCCCAAAAA TATGGTGGTG
 301 TTTTTCACCT TAAAATGGGT TATGTTCACA AAATTGTAGT CTCTGGTCCA GACGAAGCTC
 361 GCCAAGTATT ACAGGAACAC GACATCATAT TTTCGAACCG TCCAGCGACC GTAGCCATAA
 421 GTTACCTAAC ÀTATGACAGG GCAGACATGG CTTTTGCTGA CTATGGACTC TTCTGGCGGC
 481 AGATGAGAAA ACTATGTGTA ATGAAACTCT TCAGCCGCAA ACGAGCTGAG TCATGGGACT
 541 CAGTTCGAGA CGAAGCGGAT TCCATGGTTA GAATTGTAAC AACCAACACA GGCACAGCTG
 601 TTAACTTAGG TGAACTTGTT TTCAGTCTCA CTCGTAATAT TATCTACAGA GCTGCTTTTG
 661 GAACTTGTTC TGAAGATGGA CAAGGCGAGT TCATTGAAAT TATGCAAGAG TTTTCGAAGC
 721 TATTTGGCGC TTTCAATATA GCTGATTTTA TTCCATGGCT AGGGTGGGTT GGTAAGCAGA
 781 GTCTAAATAT TAGACTTGCT AAGGCTAGAG CGTCGCTTGA TGGGTTCATT GATTCGATTA
 841 TTGATGACCA TATTATTAGA AAGAAAGCTT ATGTTAATGG CAAAAATGAT GGAGGTGATC
 901 GAGAAACTGA TATGGTGGAT GAGCTTTTAG CTTTTTACAG TGAGGAAGCA AAAGTAACTG
 961 AGTCCGAAGA TTTGCAGAAT GCTATCAGAC TTACTAAGGA TAGTATCAAA GCTATCATCA
1021 TGGATGTAAT GTTTGGAGGG ACAGAAACAG TGGCTTCTGC AATAGAATGG GCCATGGCAG
1081 AGCTTATGAG GAGTCCTGAA GATCTTAAAA AAGTACAACA AGGGCTGGCT AACGTTGTTG
1141 GACTCAACAG AAAAGTTGAA GAATCTGACT TTGAAAAATT AACATACTTA AGATGTTGTC
1201 TAAAAGAAAC TCTACGACTT CACCCTCCAA TCCCTCTCCT CCTCCATGAG ACCGCCGAGG
1261 AATCCACCGT CTCCGGCTAC CATATTCCGG CAAAGTCACA TGTTATTATA AATTCATTTG
1321 CCATTGGGCG TGACAAAAAT TCATGGGAAG ATCCTGAAAC TTATAAACCA TCTAGGTTTC
1381 TCAAAGAAGG TGTACCAGAT TTTAAAGGAG GTAATTTTGA GTTTATACCA TTTGGGTCGG
1441 GTCGGCGGTC TTGCCCCGGT ATGCAACTTG GCTTATGC ATTGGAAATG GCTGTGGCCC
1501 ATCTTCTTCA TTGTTTTACT TGGGAATTGC CAGATGGTAT GAAACCAAGT GAGCTTAAAA
1561 TGGATGATAT TTTTGGACTC ACTGCTCCAA GAGCTAATCG ACTCGTGGCT GTGCCTACTC
1621 CACGCTTGTT GTGTCCCCTT TATTAATTGA AGAAAAAAGG TGGGGCT
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SEQ. ID. NO. 188

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   1 MKEMVQNNMS TSLLETLQAT PMIFYFIVPL FCLFLLSKSR RKRLPPGPTG WPLIGNMMMM
  61 DQLTHRGLAK LAQKYGGVFH LKMGYVHKIV VSGPDEARQV LQEHDIIFSN RPATVAISYL
 121 TYDRADMAFA DYGLFWRQMR KLCVMKLFSR KRAESWDSVR DEADSMVRIV TTNTGTAVNL
 181 GELVFSLTRN IIYRAAFGTC SEDGQEFIE IMQEFSKLFG AFNIADFIPW LGWVGKQSLN
 241 IRLAKARASL DGFIDSIIDD HIIRKKAYVN GKNDGGDRET DMVDELLAFY SEEAKVTESE
 301 DLQNAIRLTK DSIKAIIMDV MFGGTETVAS AIEWAMAELM RSPEDLKKVQ QGLANVVGLN
 361 RKVEESDFEK LTYLRCCLKE TLRLHPPIPL LLHETAEEST VSGYHIPAKS HVIINSFAIG
 421 RDKNSWEDPE TYKPSRFLKE GVPDFKGGNF EFIPFGSGRR SCPGMQLGLY ALEMAVAHLL
 481 HCFTWELPDG MKPSELKMDD IFGLTAPRAN RLVAVPTPRL LCPLY
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NAME   D135-AE1
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 189
      1 GGGGGATAAG AATATGGAGA TACCATATTA CAGCTTAAAA CTTACAATTT TTTCATTTGC
     61 AATTATCTTT GTACTAAGAT GGGCATGGAA AATCTTGAAT TATGTGTGGT TAAAACCAAA
    121 AGAATTGGAG AAATGCATCA GACAGCAGGG TTTCAAAGGA AACTCTTACA AATTCTTGTT
    181 TGGGGATATG AAAGAGATAA AGAAAATGGG TGAAGAAGCT ATGTCTAAGC CAATCAATTT
    241 CTCTCATGAC ATGATTTGGC CTAGAGTCAT GCCCTTCATC CACAAAACCA TCACCAATTA
    301 TGGTAAGAAT TGTTTTGTGT GGTTTGGGCC AAGACCAGCA GTCCTGATCA CAGACCCGGA
    361 ACTTGTAAAG GAGGTGCTAA CGAAGAATTT CGTTTATCAG AAGCCACCTG GCACTCCACT
    421 CACAAAATTG GCAGCAACTG GAATTGCAGG CTATGAAACA GATAAATGGG CTACACATAG
    481 AAGGCTTCTC AATCCTGCTT TTCACCTTGA CAAGTTGAAG CATATGCTAC CTGCATTCCA
    541 ATTTACTGCT TGTGAGATGT TGAGCAAATT GGAGAAAGTT GTCTCACCAA ATGGAACAGA
    601 GATAGATGTG TGGCCATATC TACAAACTTT AACAAGTGAT GCCATTCAA GAACTGCTTT
    661 TGGCAGTAGT TATGAAGAAG AAGAAAGCT TTTTGAACTT CAAAAGGAAC AACTTTCACT
    721 AATTCTAGAA GTGTCCCGCA CAATATACAT CCCAGGATGG AGGTTTTTGC CAACAAAAAG
    781 GAACAAAAGG ATGAAGCAAA TATTTAATGA AGTACGAGCG CTGGTATTGG GAATTATTAA
    841 GAAAAGATTG AGTATGATTG AAAATGGAGA AGCTCCTGAT GATTATTGG GTATATTATT
    901 GGCATCCAAT TTAAAAGAAA TCCAACAACA TGGAAATAAC AAGAAATTTG GTATGAGTAT
    961 TGATGAGGTG ATTGAAGAGT GTAAACTCTT CTATTTTGCG GGGCAAGAGA CAACTTCATC
   1021 TTTACTTGTA TGGACTATGA TTTTGTTGTG CAAACATCCT AGTTGGCAAG ATAAAGCTAG
   1081 AGAAGAGGTT TTGCAAGTGT TTGGAAGTAG GGAAGTTGAC TATGACAAGT TGAATCAGCT
   1141 AAAAATAGTA ACTATGATCT TAAACGAGGT CTTAAGGTTG TATCCAGCAG GATATGCGAT
   1201 TAATCGAATG GTAACCAAAG AAACAAAGTT AGGGAATTTA TGTTTACCAG CTGGGGTACA
   1261 ACTCTTGTTA CCAACAATTT TGTTGCAACA TGATACTGAA ATATGGGGAG ATGATGCAAT
   1321 GGAGTTCAAT CCAGAGAGAT TTAGTGATGG AATATCCAAA GCAACAAAG GAAAACTTGT
   1381 GTTCTTTCCA TTTAGTTGGG GTCCAAGAAT ATGTATTGGG CAAAATTTTG CTATGTTAGA
   1441 GGCCAAGATG GCAATGGCTA TGATTCTGAA AAACTATGCA TTTGAACTCT CTCCATCTTA
   1501 TGCTCATGCT CCTCATCCAC TACTACTTCA ACCTCAATAT GGTGCTCAAT TAATTTTGTA
   1561 CAAGTTGTAG AAATGGTCAA TTTGGAACTT GTTATGGAAC TTTTATCATC GTAATCAACC

SEQ. ID. NO. 190
      1 MEIPYYSLKL TIFSFAIIFV LRWAWKILNY VWLKPKELEK CIRQQGFKGN SYKFLFGDMK
     61 EIKKMGEEAM SKPINFSHDM IWPRVMPFIH KTITNYGKNC FVWFGPRPAV LITDPELVKE
    121 VLTKNFVYQK PPGTPLTKLA ATGIAGYETD KWATHRRLLN PAFHLDKLKH MLPAFQFTAC
    181 EMLSKLEKVV SPNGTEIDVW PYLQTLTSDA ISRTAFGSSY EEGRKLFELQ KEQLSLILEV
    241 SRTIYIPGWR FLPTKRNKRM KQIFNEVRAL VLGIIKKRLS MIENGEAPDD LLGILLASNL
    301 KEIQQHGNNK KFGMSIDEVI EECKLFYFAG QETTSSLLVW TMILLCKHPS WQDKAREEVL
    361 QVFGSREVDY DKLNQLKIVT MILNEVLRLY PAGYAINRMV TKETKLGNLC LPAGVQLLLP
    421 TILLQHDTEI WGDDAMEFNP ERFSDGISKA TKGKLVFFPF SWGPRICIGQ NFAMLEAKMA
    481 MAMILKNYAF ELSPSYAHAP HPLLLQPQYG AQLILYKL

NAME   D141-AD7
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 191
      1 GTCCTAACTA AAAATGGAGA TTCAGTTTTC TAACTTAGTT GCATTCTTGC TCTTTCTCTC
     61 CAGCATCTTT CTTCTATTCA AAAAATGGAA AACCAGAAAA CTAAATTTGC CTCCTGGTCC
    121 ATGGAAATTA CCTTTTATTG GAAGTTTACA CCATTGGCT GTGGCAGGTC CACTTCCTCA
    181 CCATGGCCTA AAAAATTTAG CCAAACGCTA TGGTCCTCTT ATGCATTTAC AACTTGGACA
    241 AATTCCTACA CTCATCTATAT CATCACCTCA AATGGCAAAA GAAGTACTAA AAACTCACGA
    301 CCTCGCTTTT GCCACTAGAC CAAAGCTTGT CGTGGCCGAC ATCATTCACT ACGACAGCAC
    361 GGACATAGCA TTTTCTCCGT ACGGTGAATA CTGGAGACAA ATTCGTAAAA TTTGCATATT
    421 GGAACTCTTG AGTGCCAAGA TGGTCAAATT TTTTAGCTCG ATTCGCCAAG ATGAGCTCTC
    481 GAAGATGCTC TCATCTATAC GAACGACACC CAATCTTACA GTCAATCTTA CTGACAAAAT
    541 TTTTTGGTTT ACGAGTTCGG TAACTTGTAG ATCAGCTTTA GGGAAGATAT GTGGTGACCA
    601 AGACAAATTG ATCATTTTTA TGAGGGAAAT AATATCATTG CAGGTGGAT TTAGTATTGC
    661 TGATTTTTTC CCTACATGGA AAATGATTCA TGATATTGAT GGTTCGAAAT CTAAACTGGT
    721 GAAAGCACAT CGTAAGATTG ATGAAATTTT GGGAAATGTT GTTGATGAGC ACAAAAAGAA
    781 CAGAGCAGAT GGCAAGAAGG GTAATGGTGA ATTTGGTGGT GAAGATTTGA TTGATGTATT
    841 GTTAAGAGTT AGAGAAAGTG AGAAGTTCCA AATTCCTATC ACAAATGACA ATATCAAATC
    901 AATATTAATC GACATGTTCT CTGCGGGATC TGAAACATCA TCGACGACTA TAATTTGGGC
    961 ATTAGCTGAA ATGATGAAGA AACCAAGTGT TTTAGCAAAG GCACAAGCTG AAGTAAGGCA
   1021 AGCTTTGAAG GAGAAAAAAG GTTTTCAACA GATTGATCTT GATGAGCTAA AATATCTCAA
   1081 GTTAGTAATC AAAGAAACCT TAAGAATGCA CCCTCCAATT CCTCTATTAG TTCCTAGAGA
   1141 ATGTATGGAG GATACAAAGA TTGATGGTTA CAATATACCT TTCAAAACAA GAGTCATAGT
   1201 TAATGCATGG GCAATCGGAC GAGATCCAGA AAGTTGGGAT GACCCCGAAA GCTTTATGCC
   1261 AGAGAGATTT GAGAATAGTT CTATTGACTT TCTTGGAAAT CATCATCAGT TTATACCATT
   1321 TGGTGCAGGA AGAAGGATTT GTCCGGGAAT GCTATTTGGT TTAGCTAATG TTGGACAACC
   1381 TTTAGCTCAG TTACTTTATC ACTTCGATTG GAAACTCCCT AATGGACAAA GTCATGAGAA
   1441 TTTCGACATG ACTGAGTCAC CTGGAATTTC TGCTACAAGA AAGGATGATC TTGTTTTGAT
   1501 TGCCACTCCT TATGATTCTT ATTAAGCAGT AGCAGAAATA AAAAGCCGGG GCAAACAGAA
   1561 AAAAGT

SEQ. ID. NO. 192
      1 MEIQFSNLVA FLLFLSSIFL LFKKWKTRKL NLPPGPWKLP FIGSLHHLAV AGPLPHHGLK
     61 NLAKRYGPLM HLQLGQIPTL IISSPQMAKE VLKTHDLAFA TRPKLVVADI IHYDSTDIAF
    121 SPYGEYWRQI RKICILELLS AKMVKFFSSI RQDELSKMLS SIRTTPNLTV NLTDKIFWFT
    181 SSVTCRSALG KICGDQDKLI IFMREIISLA GGFSIADFFP TWKMIHDIDG SKSKLVKAHR
    241 KIDEILGNVV DEHKKNRADG KKGNGEFGGE DLIDVLLRVR ESGEVQIPIT NDNIKSILID
    301 MFSAGSETSS TTIIWALAEM MKKPSVLAKA QAEVRQALKE KKGFQQIDLD ELKYLKLVIK
    361 ETLRMHPPIP LLVPRECMED TKIDGYNIPF KTRVIVNAWA IGRDPESWDD PESFMPERFE
    421 NSSIDFLGNH HQFIPFGAGR RICPGMLFGL ANVGQPLAQL LYHFDWKLPN GQSHENFDMT
    481 ESPGISATRK DDLVLIATPY DSY

NAME   D147-AD3
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 193
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      1 CAACTAACAA ACACATTGAG TCCTCTCCCA AATCACTGAT TCACCACCAA AAGTACCAAC
     61 AATTCAATGG AAGGTACAAA CTTGACTACA TATGCAGCAG TATTTCTTGA TACTCTGTTT
    121 CTTTTGTTCC TTTCCAAACT TCTTCGCCAG AGGAAACTCA ATTTACCTCC AGGCCCAAAA
    181 CCATGGCCGA TCATCGGAAA CTTAAACCTT ATTGGCAATC TTCCTCATCG CTCAATCCAC
    241 GAACTCTCCC TCAAGTACGG ACCCGTTATG CAACTCCAAT TCGGGTCTTT CCCCGTTGTA
    301 GTTGGATCCT CCGTCGAAAT GGCTAAGATT TTCCTCAAAT CCATGGATAT TAACTTTGTA
    361 GGCAGGCCTA AAACGGCTGC CGGAAAATAC ACAACGTACA ATTATTCCGA TATTACATGG
    421 TCTCCTTACG GACCATATTG GCGCCAGGCA CGTAGGATGT GCCTAACGGA ATTATTCAGC
    481 ACGAAACGTC TCGATTCATA CGAGTATATT CGGGCTGAGG AGTTGCATTC TCTTCTCCAT
    541 AATTTGAACA AAATATCAGG GAAACCAATT GTGTTGAAAG ATTATTCGAC GACGTTGAGT
    601 TTAAATGTTA TTAGCAGGAT GGTACTGGGG AAAAGGTATT TGGACGAATC CGAGAACTCG
    661 TTCGTGAATC CTGAGGAATT TAAGAAGATG TTGGACGAAT GTTTTTGCT AAATGGTGTA
    721 CTTAATATTG GAGATTCAAT TCCATGGATT GATTTCATGG ATTTGCAAGG TTATGTTAAG
    781 AGGATGAAAG TAGTGAGCAA GAAATTCGAC AAGTTTTTAG AGCATGTTAT TGATGAGCAT
    841 AACATTAGGA GAAATGGAGT GGAGAATTAT GTTGCTAAGG ATATGGTGGA TGTTTTGTTG
    901 CAGCTCGCTG ATGATCCGAA GTTGGAAGTT AAGCTGGAGA GACATGGAGT CAAAGCATTC
    961 ACTCAGGATA TGCTGGCTGG TGGAACCGAG AGTTCAGCAG TGACAGTGGA GTGGGCAATT
   1021 TCAGAGCTGC TAAAGAAGCC GGAGATTTTC AAAAAGGCTA CAGAAGAATT GGATCGAGTA
   1081 ATTGGGCAGA ATAGATGGGT ACAAGAAAAG GACATTCCAA ATCTTCCTTA CATAGAGGCA
   1141 ATAGTCAAAG AGACTATGCG ACTGCACCCC GTGGCACCAA TGTTGGTGCC ACGTGAGTGT
   1201 CGAGAAGATA TTAAGGTAGC AGGCTACGAC GTTCAGAAAG GAACTAGGGT TCTCGTGAGT
   1261 GTATGGACTA TTGGAAGAGA CCCTACATTG TGGGACGAGC CTGAGGTGTT CAAGCCGGAG
   1321 AGATTCCATG AAAGGTCCAT AGATGTTAAA GGACATGATT ATGAGCTTTT GCCATTTGGA
   1381 GCGGGGAGAA GAATGTGCCC GGGTTATAGC TTGGGGCTCA AGGTGATTCA AGCTAGCTTA
   1441 GCTAATCTTC TACATGGATT TAACTGGTCA TTGCCTGATA ATATGACTCC TGAGGACCTC
   1501 AACATGGATG AGATTTTTGG GCTCTCTACA CCTAAAAAAT TTCCACTTGC TACTGTGATT
   1561 GAGCCAAGAC TTTCACCAAA ACTTTACTCT GTTTGATTCA GCAGTTCTAT GGTTCCGTCA
   1621 AGATAGACTT TGTTACGTTT GAACCTGTGC TC
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SEQ. ID. NO. 194
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      1 MEGTNLTTYA AVFLDTLFLL FLSKLLRQRK LNLPPGPKPW PIIGNLNLIG NLPHRSIHEL
     61 SLKYGPVMQL QFGSFPVVVG SSVEMAKIFL KSMDINFVGR PKTAAGKYTT YNYSDITWSP
    121 YGPYWRQARR MCLTELFSTK RLDSYEYIRA EELHSLLHNL NKISGKPIVL KDYSTTLSLN
    181 VISRMVLGKR YLDESENSFV NPEEFKKMLD ELFLLNGVLN IGDSIPWIDF MDLQGYVKRM
    241 KVVSKKFDKF LEHVIDEHNI RRNGVENYVA KDMVDVLLQL ADDPKLEVKL ERHGVKAFTQ
    301 DMLAGGTESS AVTVEWAISE LLKKPEIFKK ATEELDRVIG QNRWVQEKDI PNLPYIEAIV
    361 KETMRLHPVA PMLVPRECRE DIKVAGYDVQ KGTRVLVSVW TIGRDPTLWD EPEVFKPERF
    421 HERSIDVKGH DYELLPFGAG RRMCPGYSLG LKVIQASLAN LLHGFNWSLP DNMTPEDLNM
    481 DEIFGLSTPK KFPLATVIEP RLSPKLYSV
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NAME   D163-AF12
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 195
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       1 CTTCTTCCTT CCTAACTAAA AATGGAGATT CAGTTTTCTA ACTTAGTTGC ATTCTTGCTC
      61 TTTCTCTCCA GCATCTTTCT TGTATTCAAA AAATGGAAAA CCAGAAAACT AAATTTGCCT
     121 CCTGGTCCAT GGAAATTACC TTTTATTGGA AGTTTACACC ATTTGGCTGT GGCAGGTCCA
     181 CTTCCTCACC ATGGCCTAAA AAATTTAGCC AAACGCTATG GTCCTCTTAT GCATTACAA
     241 CTTGGACAAA TTCCTACACT CGTCATATCA TCACCTCAAA TGGCAAAAGA AGTACTAAAA
     301 ACTCACGACC TCGCTTTTGC CACTAGACCA AAGCTTGTCG TGGCCGACAT CATTCACTAC
     361 GACAGCACGG ACATAGCATT TTCGCCATAC GGTGAATACT GGAGACAAAT TCGTAAAATT
     421 TGCATATTGG AACTCTTGAG TGCCAAGATG GTCAAGTTTT TTAGCTCGAT TCGCCAAGAT
     481 GAGCTCTCGA AGATGGTTTC ATCTATACGA ACGACGCCCA ATCTTCCAGT CAATCTTACC
     541 GACAAGATTT TTTGGTTTAC GAGTTCGGTA ATTTGTAGAT CAGCTTTAGG GAAGATATGT
     601 GGTGACCAAG ACAAATTGAT CATTTTTATG AGGGAAATAA TATCATTGGC AGGTGGATTT
     661 AGTATTGCTG ATTTTTTCCC TACATGGAAA ATGATTCATG ATATTGATGG TTCAAAATCT
     721 AAACTGGTGA AGGCACATCG TAAGATTGAT GAAATTTTGG AAAATGTGGT AAATGAGCAC
     781 AAACAGAATC GAGCAGATGG TAAAAAGGGT AATGGTGAAT TTGGTGGAGA AGATCTGATT
     841 GATGTTTTGT TAAGAGTTAG AGAAAGTGGA GAAGTTCAAA TTCCAATCAC AGATGACAAT
     901 ATCAAATCAA TATTAATCGA CATGTTCTCT GCCGGATCGG AAACATCATC GACAACTATA
     961 ATTTGGGCAT TAGCTGAAAT GATGAAGAAA CCAAGTGTTT TAGCAAAGGC ACAAGCTGAA
    1021 GTGAGGCAAG CTTTGAAGGG GAAGAAAATT AGTTTTCAAG AGATTGATAT TGATAAGCTA
    1081 AAGTATTTGA AGTTAGTGAT CAAAGAAACT TTAAGAATGC ACCCTCCAAT TCCTCTGTTA
    1141 GTCCCTAGAG AATGTATGGA AGATACAAAG ATTGATGGTT ACAATATACC TTTCAAAACA
    1201 AGAGTCATTG TTAATGCATG GCAATTGGA CGAGATCCTC AAAGTTGGGA TGATCCTGAA
    1261 AGCTTTACGC CAGAGAGATT TGAGAATAAT CTATTGATT TTCTTGGAAA TCATCATCAA
    1321 TTTATTCCAT TTGGTGCAGG AAGAAGGATT TGTCCTGGAA TGCTATTTGG TTTAGCTAAT
    1381 GTTGGACAAC CTTTAGCTCA GTTACTTTAT CACTTCGATT GGAAACTCCC TAATGGACAA
    1441 AGTCATGAGA ATTTCGACAT GACTGAGTCA CCTGGAATTT CTGCTACAAG AAAGGATGAT
    1501 CTTGTTTTGA TTGCCACTCC TTATGATTCT TATTAAGCAG TAGCAGAAAT AAAAAGCCGG
    1561 GGCAAACAGA AAAAAGTATT GCTGCTTCTA GGTATTTTCT ATTGGATAAA TTTCAAAATT
    1621 CATCCACAAT ATTTAGTGTT TGCTAGAGTT GGTTAGC
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SEQ. ID. NO. 196
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       1 MEIQFSNLVA FLLFLSSIFL VFKKWKTRKL NLPPGPWKLP FIGSLHHLAV AGPLPHHGLK
      61 NLAKRYGPLM HLQLGQIPTL VISSPQMAKE VLKTHDLAFA TRPKLVVADI IHYDSTDIAF
     121 SPYGEYWRQI RKICILELLS AKMVKFFSSI RQDELSKMVS SIRTTPNLPV NLTDKIFWFT
     181 SSVICRSALG KICGDQDKLI IFMREIISLA GGFSIADFFP TWKMIHDIDG SKSKLVKAHR
     241 KIDEILENVV NEHKQNRADG KKGNGEFGGE DLIDVLLRVR ESGEVQIPIT DDNIKSILID
     301 MFSAGSETSS TTIIWALAEM MKKPSVLAKA QAEVRQALKG KKISFQEIDI DKLKYLKLVI
     361 KETLRMHPPI PLLVPRECME DTKIDGYNIP FKTRVIVNAW AIGRDPQSWD DPESFTPERF
     421 ENNSIDFLGN HHQFIPFGAG RRICPGMLFG LANVGQPLAQ LLYHFDWKLP NGQSHENFDM
     481 TESPGISATR KDDLVLIATP YDSY
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NAME          D163-AG11
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 197
       1 CTTCTTCCTT CCTAACTAAA AATGGAGATT CAGTTTTCTA ACTTAGTTGC ATTCTTGCTC
      61 TTTCTCTCCA GCATCTTTCT TGTATTCAAA AAATGGAAAA CCAGAAAACT AAATTTGCCT
     121 CCTGGTCCAT GGAAATTACC TTTTATTGGA AGTTTACACC ATTTGGCTGT GGCAGGTCCA
     181 CTTCCTCACC ATGGCCTAAA AAATTTAGCC AAACGCTATG GTCCTCTTAT GCATTTACAA
     241 CTTGGACAAA TTCCTACACT CGTCATATCA TCACCTCAAA TGGCAAAAGA AGTACTAAAA
     301 ACTCACGACC TCGCTTTTGC CACTAGACCA AAGCTTGTCG TGGCCGACAT CATTCACTAC
     361 GACAGCACGG ACATAGCACT TTCGCCATAC GGTGAATACT GGAGACAAAT TCGTAAAATT
     421 TGCATATTGG AACTCTTGAG TGCCAAGATG GTCAAGTTTT TTAGCTCGAT TCGCCAAGAT
     481 GAGCTCTCGA AGATGGTTTC ATCTATACGA ACGACGCCCA ATCTTCCAGT CAATCTTACC
     541 GACAAGATTT TTTGGTTTAC GAGTTCGGTA ATTTGTAGAT CAGCTTTAGG GAAGATATGT
     601 GGTGACCAAG ACAAATTGAT CATTTTTATG AGGGAAATAA TATCATTGGC AGGTGGATTT
     661 AGTATTGCTG ATTTTTTCCC TACATGGAAA ATGATTCATG ATATTGATGG TTCAAAATCT
     721 AAACTGGTGA AGGCACATCG TAAGATTGAT GAAATTTTGG AAAATGTGGT AAATGAGCAC
     781 AAACAGAATC GAGCAGATGG TAAAAAGGGT AATGGTGAAT TTGGTGGAGA AGATCTGATT
     841 GATGTTTTGT TAAGAGTTAG AGAAAGTGGA GAAGTTCAAA TTCCAATCAC AGATGACAAT
     901 ATCAAATCAA TATTAATCGA CATGTTCTCT GCCGGATCGG AAACATCATC GACAACTATA
     961 ATTTGGGCAT TAGCTGAAAT GATGAAGAAA CCAAGTGTTT TAGCAAAGGC ACAAGCTGAA
    1021 GTGAGCCAAG CTTTGAAGGG GAAGAAAATT AGTTTTCAAG AGATTGATAT TGATAAGCTA
    1081 AAGTATTTGA AGTTAGTGAT CAAAGAAACT TTAAGAATGC ACCCTCCAAT TCCTCTGTTA
    1141 GTCCCTAGAG AATGTATGGA AGATACAAAG ATTGATGGTT ACAATATACC TTTCAAAACA
    1201 AGAGTCATTG TTAATGCATG GGCAATTGGA CGAGATCCTC AAAGTTGGGA TGATCCTGAA
    1261 AGCTTTACGC CAGAGAGATT TGAGAATAAT CTATTGATT TTCTTGGAAA TCATCATCAA
    1321 TTTATTCCAT TTGGTGCAGG AAGAAGGATT TGTCCTGGAA TGCTATTTGG TTTAGCTAAT
    1381 GTTGGACAAC CTTTAGCTCA GTTACTTTAT CACTTCGATT GGAAACTCCC TAATGGACAA
    1441 ACTCACCAAA ATTTCGACAT GACTGAGTCA CCTGGAATTT CTGCTACAAG AAAGGATGAT
    1501 CTTATTTTGA TTGCCACTCC TGCTCATTCT TGATTAAGTA TTGCTGCTTT TCTATTGGAG
    1561 AATTTTCAAA ATTCATCCAC AATATATAGT GTTTGCTAGA GTTGGTTAGC
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SEQ. ID. NO. 198
       1 MEIQFSNLVA FLLFLSSIFL VFKKWKTRKL NLPPGPWKLP FIGSLHHLAV AGPLPHHGLK
      61 NLAKRYGPLM HLQLGQIPTL VISSPQMAKE VLKTHDLAFA TRPKLVVADI IHYDSTDIAL
     121 SPYGEYWRQI RKICILELLS AKMVKFFSSI RQDELSKMVS SIRTTPNLPV NLTDKIFWFT
     181 SSVICRSALG KICGDQDKLI IFMREIISLA GGFSIADFFP TWKMIHDIDG SKSKLVKAHR
     241 KIDEILENVV NEHKQNRADG KKGNGEFGGE DLIDVLLRVR ESGEVQIPIT DDNIKSILID
     301 MFSAGSETSS TTIIWALAEM MKKPSVLAKA QAEVSQALKG KKISFQEIDI DKLKYLKLVI
     361 KETLRMHPPI PLLVPRECME DTKIDGYNIP FKTRVIVNAW AIGRDPQSWD DPESFTPERF
     421 ENNSIDFLGN HHQFIPFGAG RRICPGMLFG LANVGQPLAQ LLYHFDWKLP NGQTHQNFDM
     481 TESPGISATR KDDLILIATP AHS
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NAME        D163-AG12
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 199
      1 ATCCTTCTTC CTTCCTAGGT CCTAACTAAA AATGGAGATT CAGTTTTCTA ACTTAGTTGC
     61 ATTCTTGCTC TTTCTCTCCA GCATCTTTCT TCTATTCAAA AAATGGAAAA CCAGAAAACT
    121 AAATTTGCCT CCTGGTCCAT GGAAATTACC TTTTATTGGA AGTTTACACC ATTTGGCTGT
    181 GGCAGGTCCA CTTCCTCACC ATGGCCTAAA AAATTTAGCC AAACGCTATG GTCCTCTTAT
    241 GCATTTACAA CTTGGACAAA TTCCTACACT CATCATATCA TCACCTCAAA TGGCAAAAGA
    301 AGTACTAAAA ACTCACGACC TCGCTTTTGC CACTAGACCA AAGCTTGTCG TGGCCGACAT
    361 CATTCACTAC GACAGCACGG ACATAGCATT TTCTCCGTAC GGTGAATACT GGAGACAAAT
    421 TCGTAAAATT TGCATATTGG AACTCTTGAG TGCCAAGATG GTCAAATTTT TTAGCTCGAT
    481 TCGCCAAGAT GAGCTCTCGA AGATGCTCTC ATCTATACGA ACGACACCCA ATCTTACAGT
    541 CAATCTTACT GACAAAATTT TTTGGTTTAC GAGTTCGGTA ACTTGTAGAT CAGCTTTAGG
    601 GAAGATATGT GGTGACCAAG ACAAATTGAT CATTTTTATG AGGGAAATAA TATCATTGGC
    661 AGGTGGATTT AGTATTGCTG ATTTTTTCCC TACATGGAAA ATGATTCATG ATATTGATGG
    721 TTCGAAATCT AAACTGGTGA AAGCACATCG TAAGATTGAT GAAATTTTGG GAAATGTTGT
    781 TGATGAGCAC AAAAAGAACA GAGCAGATGG CAAGAAGGGT AATGGTGAAT TTGGTGGTGA
    841 AGATTTGATT GATGTATTGT TAAGAGTTAG AGAAAGTGGA GAAGTTCAAA TTCCTATCAC
    901 AAATGACAAT ATCAAATCAA TATTAATCGA CATGTTCTCT GCGGGATCTG AAACATCATC
    961 GACGACTATA ATTTGGGCAT TAGCTGAAAT GATGAAGAAA CCAAGTGTTT TAGCAAAGGC
   1021 ACAAGCTGAA GTAAGGCAAG CTTTGAAGGA GAAAAAGGGT TTTCAACAGA TTGATCTTGA
   1081 TGAGCTAAAA TATCTCAAGT TAGTAATCAA AGAAACCTTA AGAATGCACC CTCCAATTCC
   1141 TCTATTAGTT CCTAGAGAAT GTATGGAGGA TACAAAGATT GATGGTACA ATATACCTTT
   1201 CAAAACAAGA GTCATAGTTA ATGCATGGGC AATCGGACGA GATCCAGAAA GTTGGGATGA
   1261 CCCCGAAAGC TTTATGCCAG AGAGATTTGA GAATAGTTCT ATTGACTTTC TTGGAAATCA
   1321 TCATCAGTTT ATACCATTTG GTGCAGGAAG AAGGATTTGT CCGGGAATGC TATTTGGTTT
   1381 AGCTAATGTT GGACAACCTT TAGCTCAGTT ACTTTATCAC TTCGATTGGA AACTCCCTAA
   1441 TGGACAAAGT CATGAGAATT TCGACATGAC TGAGTCACCT GGAATTTCTG CTACAAGAAA
   1501 GGATGATCTT GTTTTGATTG CCACTCCTTA TGATTCTTAT TAAGCAGTAG CAGAAATAAA
   1561 AAGCCGGGGC AAACAGAAAA AGTATTGCT GCTTCTAGGT ATTTTCTATT GGATAAATTT
   1621 CAAAATTCAT CCACAATATT TAGTGTTTGC TAGAGTTGGT TAGC

SEQ. ID. NO. 200
      1 MEIQFSNLVA FLLFLSSIFL LFKKWKTRKL NLPPGPWKLP FIGSLHHLAV AGPLPHHGLK
     61 NLAKRYGPLM HLQLGQIPTL IISSPQMAKE VLKTHDLAFA TRPKLVVADI IHYDSTDIAF
    121 SPYGEYWRQI RKICILELLS AKMVKFFSSI RQDELSKMLS SIRTTPNLTV NLTDKIFWFT
    181 SSVTCRSALG KICGDQDKLI IFMREIISLA GGFSIADFFP TWKMIHDIDG SKSKLVKAHR
    241 KIDEILGNVV DEHKKNRADG KKGNGEFGGE DLIDVLLRVR ESGEVQIPIT NDNIKSILID
    301 MFSAGSETSS TTIIWALAEM MKKPSVLAKA QAEVRQALKE KKGFQQIDLD ELKYLKLVIK
    361 ETLRMHPPIP LLVPRECMED TKIDGYNIPF KTRVIVNAWA IGRDPESWDD PESFMPERFE
    421 NSSIDFLGNH HQFIPFGAGR RICPGMLFGL ANVGQPLAQL LYHFDWKLPN GQSHENFDMT
    481 ESPGISATRK DDLVLIATPY DSY
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NAME          D205-BG9
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 201
      1 TTCTTATTTT GATTCAACCA TGGAGAACCA ATACTCCTAC TCATTCTCTT CCTACTTCTA
     61 CTTAGCTATA GTACTGTTTC TTCTTCCAAT TTTGGTCAAA TATTTCTTCC ATCGGAGAAG
    121 AAATTTACCT CCAAGTCCAT TTTCTCTTATC AATAATTGGT CACCTTTACC TTCTCAAGAA
    181 AACTCTCCAT CTCACTCTAA CATCCTTATC AGCTAAATAT GGTCCTGTTT TATACCTCAA
    241 ATTGGGCTCT ATGCCTGTGA TTGTTGTGTC CTCACCATCT GCTGTTGAAG AATGTTTAAC
    301 CAAGAATGAT ATCATATTCG CAAATAGGCC CAAGACCGTG GCTGGTGACA AGTTTACCTA
    361 CAATTATACT GTTTATGTTT GGGCACCCTA TGGCCAACTT TGGAGAATTC TTCGCCGATT
    421 AACTGTCGTT GAACTCTTCT CTTCACATAG CCTACAGAAA ACTTCTATCC TTAGAGATCA
    481 AGAAGTTGCA ATATTTATCC GTTCGTTATA CAAATTCTCA AAGGATAGTA GCAAAAAAGT
    541 CGATTTGACC AACTGGTCTT TTACTTTGGT TTTCAATCTT ATGACCAAAA TTATTGCTGG
    601 GAGACATATT GTGAAGGAGG AAGATGCTGG CAAGGAAAAG GGCATTGAAA TTATTGAAAA
    661 ACTTAGAGGG ACTTTCTTAG TAACTACATC ATTCTTGAAT ATGTGTGATT TCTTGCCAGT
    721 ATTCAGGTGG GTTGGTTACA AAGGGCTGGA GAAGAAGATG GCCTCAATTC ACAATAGAAG
    781 AAATGAATTC TTGAACAGCT TGCTTGATGA ATTTCGACAC AAGAAAAGTA GTGCTTCACA
    841 ATCTAACACA ACTGTTGGAA ACATGGAGAA GAAAACCACA CTGATTGAAA AGCTCTTGTC
    901 TCTTCAAGAA TCAGAGCCTG AATTCTACAC TGATGATATC ATCAAAAGTA TTATGCTGGT
    961 AGTTTTTGTT GCAGGAACAG AGACCTCATC AACAACCATC CAATGGGTAA TGAGGCTTCT
   1021 TGTAGCTCAC CCTGAGGCAT TGTATAAGCT ACGAGCTGAC ATTGACAGTA AAGTTGGGAA
   1081 TAAGCGCTTG CTGAATGAAT CAGACCTCAA CAAGCTTCCG TATTTGCATT GTGTTGTTAA
   1141 TGAGACAATG AGATTATACA CTCCGATACC ACTTTTATTG CCTCATTATT CAACTAAAGA
   1201 TTGTATTGTG GAAGGATATG ATGTACCAAA ACATACAATG TTGTTTGTCA ACGCTTGGGC
   1261 CATTCACAGG GATCCCAAGG TATGGGAGGA GCCTGACAAG TTCAAGCCAG AGAGATTTGA
   1321 GGCAACAGAA GGGGAAACAG AAAGGTTCAA TTACAAGCTT GTACCATTTG GAATGGGGAG
   1381 AAGAGCGTGC CCTGGAGCTG ATATGGGGTT GCGAGCAGTT TCTTTGGCAT TAGGTGCACT
   1441 TATTCAATGC TTTGACTGGC AAAATTGAGGA AGCGGAAAGC TTGGAGGAAA GCTATAATTC
   1501 TAGAATGACT ATGCAGAACA AGCCTTTGAA GGTTGTCTGC ACTCCACGCG AAGATCTTGG
   1561 CCAGCTTCTA TCCCAACTCT AAGGCAATTT ATCAATGCCA AACGTAATCT TCATCTACCA
   1621 CTATG

SEQ. ID. NO. 202
      1 MENQYSYSFS SYFYLAIVLF LLPILVKYFF HRRRNLPPSP FSLPIIGHLY LLKKTLHLTL
     61 TSLSAKYGPV LYLKLGSMPV IVVSSPSAVE ECLTKNDIIF ANRPKTVAGD KFTYNYTVYV
    121 WAPYGQLWRI LRRLTVVELF SSHSLQKTSI LRDQEVAIFI RSLYKFSKDS SKKVDLTNWS
    181 FTLVFNLMTK IIAGRHIVKE EDAGKEKGIE IIEKLRGTFL VTTSFLNMCD FLPVFRWVGY
    241 KGLEKKMASI HNRRNEFLNS LLDEFRHKKS SASQSNTTVG NMEKKTTLIE KLLSLQESEP
    301 EFYTDDIIKS IMLVVFVAGT ETSSTTIQWV MRLLVAHPEA LYKLRADIDS KVGNKRLLNE
    361 SDLNKLPYLH CVVNETMRLY TPIPLLLPHY STKDCIVEGY DVPKHTMLFV NAWAIHRDPK
    421 VWEEPDKFKP ERFEATEGET ERFNYKLVPF GMGRRACPGA DMGLRAVSLA LGALIQCFDW
    481 QIEEAESLEE SYNSRMTMQN KPLKVVCTPR EDLGQLLSQL
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NAME          D207-AA5
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 203
      1 AACCAACCTT CCTTTTCTTA CTTAGTAAAA TGGATATTCA GTCTTCTCCT TTCAACTTAA
     61 TTGCTTTGCT ACTCTTCATT TCATTTCTTT TTATCCTATT GAAAAAGTGG AATACCAAAA
    121 TCCCAAAGTT ACCTCCAGGT CCATGGAGAC TTCCCCTTAT TGGCAGCCTC CATCACTTGA
    181 AAGGTAAACT CCCACACCAT CATCTTAGAG ATTTAGCCCG AAAATATGGA CCTCTCATGT
    241 ATTTACAACT TGGAGAAGTT CCTGTAGTTG TAATATCTTC GCCACGTATA GCAAAAGCTG
    301 TACTAAAAAC TCATGATCTT GCTTTTGCAA CGAGGCCTCG GTTCATGTCC TCGGACATTG
    361 TGTTTTACAA AAGCAGGGAC ATATCATTCG CCCCATATGG CGATTACTGG AGACAAATGC
    421 GTAAAATATT AACACAAGAA CTCTTGAGTA ACAAGATGCT CAAGTCATTT AGCACAATCC
    481 GAAAGGATGA GCTCTCGAAG CTCCTCTCGT CGATTCGTTT AGCAACAGCT TCTTCTGCAG
    541 TGAACATAAA CGAAAAGCTT CTCTGGTTTA CAAGTTGCAT GACTTGTAGA TTAGCCTTTG
    601 GAAAAATATG CAACGATCGT GATGAATTGA TTATGTTAAT AAGGGAGATA TTAGCATTAT
    661 CAGGAGGATT TGATGTGTGT GATTTGTTCC CTTCATGGAA ATTACTTCAC AATATGAGCA
    721 ACATGAAAGC TAGATTGACG AATGTTCACC ATAAGTATAA TCTAATTATG GAGAATATCA
    781 TCAATGAGCA CAAAGAGAAT CATGCAGCAG GGATAAAGGG AAATAACGAG TTTGGTGGCG
    841 AAGATATGAT TGATGCTTTA CTGAGGGTTA AGGAGAATAA TGAGCTTCAA TTTCCTATCG
    901 AAAATGACAA CATGAAAGCA GTAATTCTGG ACTTGTTTAT TGCTGGAACT GAAACTTCAT
    961 ATACTGCAAT TATATGGGCA CTATCAGAAT TGATGAAGCA CCCAAGTGTT ATGGCCAAGG
   1021 CACAAGCTGA AGTGAGAAAA GTCTTCAAAG AAAATGAAAA CTTGGACGAA AATGATCTTG
   1081 ACAAGTTGCC ATACTTAAAA TCAGTGATCA AGAAACACT AAGGATGCAT CCTCCAGTTC
   1141 CTTTATTAGG ACCTAGAGAA TGCAGAGAAC AAACTGAGAT TGATGGATAT ACTGTACCTC
   1201 TTAAAGCTAG AGTAATGGTT AATGCATGGG CAATTGGAAG AGATCCTGAA AGTTGGGAAG
   1261 ATCCTGAAAG TTTCAAACCC GAGCGATTTG AAAATATTTC TGTTGATCTT ACGGGAAATC
   1321 ACTATCAGTT CATCCCTTTC GGTTCAGGAA GAAGAATGTG TCCAGGAATG TCGTTTGGTT
   1381 TAGTTAACAC TGGGCATCCT TTAGCTCAGT TGCTCTATTT CTTTGACTGG AAATTCCCTC
   1441 ATAAGGTTAA TGCAGCTGAT TTTCACACTA CTGAAACAAG TAGAGTTTTT GCAGCAAGCA
   1501 AAGATGACCT CTACTTGATT CCAACAAATC ACATGGAGCA AGAGTAGCTC TAAATTGAAT
   1561 TCTTGTCTTG AACAATAAA AGAAGAAACT CCAGCTTGGT CTACATTATT CTTTTTGCT
   1621 TTATATTAGT ATGGGTGTGT TCAGTTTCTT ATTTTTAAGG GTACCTGAA AGATAAAGGG
   1681 CTATATAAAC CAGTGAGACT TTTTATTGGT TGCAAGGTTT TAGATCAAGC CATAAGACAG
   1741 CATATTTTAT TCAAAAAAAA AAAAAAA

SEQ. ID. NO. 204
      1 MDIQSSPFNL IALLLFISFL FILLKKWNTK IPKLPPGPWR LPLIGSLHHL KGKLPHHHLR
     61 DLARKYGPLM YLQLGEVPVV VISSPRIAKA VLKTHDLAFA TRPRFMSSDI VFYKSRDISF
    121 APYGDYWRQM RKILTQELLS NKMLKSFSTI RKDELSKLLS SIRLATASSA VNINEKLLWF
    181 TSCMTCRLAF GKICNDRDEL IMLIREILAL SGGFDVCDLF PSWKLLHNMS NMKARLTNVH
    241 HKYNLIMENI INEHKENHAA GIKGNNEFGG EDMIDALLRV KENNELQFPI ENDNMKAVIL
    301 DLFIAGTETS YTAIIWALSE LMKHPSVMAK AQAEVRKVFK ENENLDENDL DKLPYLKSVI
    361 KETLRMHPPV PLLGPRECRE QTEIDGYTVP LKARVMVNAW AIGRDPESWE DPESFKPERF
    421 ENISVDLTGN HYQFIPFGSG RRMCPGMSFG LVNTGHPLAQ LLYFFDWKFP HKVNAADFHT
    481 TETSRVFAAS KDDLYLIPTN HMEQE
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NAME          D207-AB4
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 205
         1 AACCAACCTT CCTTTTCTTA CTTAGTAAAA TGGATATTCA GTCTTCTCCT TTCAACTTAA
        61 TTGCTTTGCT ACTCTTCATT TCATTTCTTT TTATCCTATT GAAAAAGTGG AATACCAAAA
       121 TCCCAAAGTT ACCTCCAGGT CCATGGAGAC TTCCCCTTAT TGGCAGCCTC CATCACTTGA
       181 AAGGTAAACT CCCACACCAT CATCTTAGAG ATTTAGCCCG AAAATATGGA CCTCTCATGT
       241 ATTTACAACT TGGAGAAGTT CCTGTAGTTG TAATATCTTC GCCACGTATA GCAAAAGCTG
       301 TACTAAAAAC TCATGATCTT GCTTTTGCAA CGAGGCCTCG GTTCATGTCC TCGGACATTG
       361 TGTTTTACAA AAGCAGGGAC ATATCATTCG CCCCATATGG CGATTACTGG AGACAAATGC
       421 GTAAAATATT AACACAAGAA CTCTTGAGTA ACAAGATGCT CAAGTCATTT AGCACAATCC
       481 GAAAGGATGG GCTCTCGAAG CTCCTCTCGT CGATTCGTTT AGCAACAGCT TCTTCTGCAG
       541 TGAACATAAA CGAAAAGCTT CTCTGGTTTA CAAGTTGCAT GACTTGTAGA TTAGCCTTTG
       601 GAAAAATATG CAACGATCGT GATGAATTGA TTATGTTAAT AAGGGAGATA TTAGCATTAT
       661 CAGGAGGATT TGATGTGTGT GATTTGTTCC CTTCATGGAA ATTACTTCAC AATATGAGCA
       721 ACATGAAAGC TAGATTGACG AATGTTCACC ATAAGTATAA TCTAATTATG GAGAATATCA
       781 TCAATGAGCA CAAAGAGAAT CATGCAGCAG GGATAAAGGG AAATAACGAG TTTGGTGGCG
       841 AAGATATGAT TGATGCTTTA CTGAGGGTTA AGGAGAATAA TGAGCTTCAA TTTCCTATCG
       901 AAAATGACAA CATGAAAGCA GTAATTCTGG ACTTGTTTAT TGCTGGAACT GAAACTTCAT
       961 ATACTGCAAT TATATGGGCA CTATCAGAAT TGATGAAGCA CCCAAGTGTT ATGGCCAAGG
      1021 CACAAGCTGA AGTGAGAAAA GTCTTCAAAG AAAATGAAAA CTTGGACGAA AATGATCTTG
      1081 ACAAGTTGCC ATACTTAAAA TCAGTGATCA AAGAAACACT AAGGATGCAT CCTCCAGTTC
      1141 CTTTATTAGG ACCTAGAGAA TGCAGAGAAC AAACTGAGAT TGATGGATAT ACTGTACCTC
      1201 TTAAAGCTAG AGTAATGGTT AATGCATGGG CAATTGGAAG AGATCCTGAA AGTTGGGAAG
      1261 ATCCTGAAAG TTTCAAACCC GAGCGATTTG AAAATATTTC TGTTGATCTT ACGGGAAATC
      1321 ACTATCAGTT CATTCCTTTC GGTTCAGGAA GAAGAATGTG TCCAGGAATG TCGTTTGGTT
      1381 TAGTTAACAC TGGGCATCCT TTAGCTCAGT TGCTCTATTT CTTTGACTGG AAATTCCCTC
      1441 ATAAGGTTAA TGCAGCTGAT TTTCACACTA CTGAAACAAG TAGAGTTTTT GCAGCAAGCA
      1501 AAGATGACCT CTACTTGATT CCAACAAATC ACATGGAGCA AGAGTAGCTC TAAATTGAAT
      1561 TCTTGTCTTG GAACGATAAA AGAAGAAACT CCAGCTTGGT CTACATTATT TCTTTTTGCT
      1621 TTATATTAGT ATGGGTGTGT TCAGTTTCTT GTTTTTAAGG GTACCCTGAA AGATAAAGGG
      1681 CTATATAAAC CAGTGAGACT TTTTATTGAA AAAAAAAAAA AAAAAAAAA AAAAAA
```

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SEQ. ID. NO. 206
         1 MDIQSSPFNL IALLLFISFL FILLKKWNTK IPKLPPGPWR LPLIGSLHHL KGKLPHHHLR
        61 DLARKYGPLM YLQLGEVPVV VISSPRIAKA VLKTHDLAFA TRPRFMSSDI VFYKSRDISF
       121 APYGDYWRQM RKILTQELLS NKMLKSFSTI RKDELSKLLS SIRLATASSA VNINEKLLWF
       181 TSCMTCRLAF GKICNDRDEL IMLIREILAL SGGFDVCDLF PSWKLLHNMS NMKARLTNVH
       241 HKYNLIMENI INEHKENHAA GIKGNNEFGG EDMIDALLRV KENNELQFPI ENDNMKAVIL
       301 DLFIAGTETS YTAIIWALSE LMKHPSVMAK AQAEVRKVFK ENENLDENDL DKLPYLKSVI
       361 KETLRMHPPV PLLGPRECRE QTEIDGYTVP LKARVMVNAW AIGRDPESWE DPESFKPERF
       421 ENISVDLTGN HYQFIPFGSG RRMCPGMSFG LVNTGHPLAQ LLYLFDWKFP HKVNAADFHT
       481 TETSRVFAAS KDDLYLIPTN HMEQE
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NAME   D207-AC4
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 207
          1 AACCAACCTT CCTTTTCTTA CTTAGTAAAA TGGATATTCA GTCTTCTCCT TTCAACTTAA
         61 TTGCTTTGCT ACTCTTCATT TCATTTCTTT TTATCCTATT GAAAAAGTGG AATACCAAAA
        121 TCCCAAAGTT ACCTCCAGGT CCATGGAGAC TTCCCCTTAT TGGCAGCCTC CATCACTTGA
        181 AAGGTAAACT CCCACACCAT CATCTTAGAG ATTTAGCCCG AAAATATGGA CCTCTCATGT
        241 ATTTACAACT TGGAGAAGTT CCTGTAGTTG TAATATCTTC GCCACGTATA GCAAAAGCTG
        301 TACTAAAAAC TCATGATCTT GCTTTTGCAA CGAGGCCTCG GTTCATGTCC TCGGACATTG
        361 TGTTTTACAA AAGCAGGGAC ATATCATTCG CCCCATATGG CGATTACTGG AGACAAATGC
        421 GTAAAATATT AACACAAGAA CTCTTGAGTA ACAAGATGCT CAAGTCATTT AGCACAATCC
        481 GAAAGGATGA GCTCTCGAAG CTCCTCTCGT CGATTCGTTT AGCAACAGCT TCTTCTGCAG
        541 TGAACATAAA CGAAAAGCTT CTCTGGTTTA CAAGTTGCAT GACTTGTAGA TTAGCCTTTG
        601 GAAAAATATG CAACGATCGT GATGAATTGA TTATGTTAAT AAGGGAGATA TTAGCATTAT
        661 CAGGAGGATT TGATGTGTGT GATTTGTTCC CTTCATGGAA ATTACTTCAC AATATGAGCA
        721 ACATGAAAGC TAGATTGACG AATGTTCACC ATAAGTATAA TCTAATTATG GAGAATATCA
        781 TCAATGAGCA CAAAGAGAAT CATGCAGCAG GGATAAAGGG AAATAACGAG TTTGGTGGCG
        841 AAGATATGAT TGATGCTTTA CTGAGGGTTA AGGAGAATAA TGAGCTTCAA TTTCCTATCG
        901 AAAATGACAA CATGAAAGCA GTAATTCTGG ACTTGTTTAT TGCTGGAACT GAAACTTCAT
        961 ATACTGCAAT TATATGGGCA CTATCAGAAT TGATGAAGCA CCCAAGTGTT ATGGCCAAGG
       1021 CACAAGCTGA AGTGAGAAAA GTCTTCAAAG AAAATGAAAA CTTGGACGAA AATGATCTTG
       1081 ACAAGTTGCC ATACTTAAAA TCAGTGATCA AAGAAACACT AAGGATGCAT CCTCCAGTTC
       1141 CTTTATTAGG ACCTAGAGAA TGCAGAGAAC AAACTGAGAT TGATGGATAT ACTGTACCTC
       1201 TTAAAGCTAG AGTAATGGTT AATGCATGGG CAATTGGAAG AGATCCTGAA AGTTGGGAAG
       1261 ATCCTGAAAG TTTCAAACCC GAGCGATTTG AAAATATTTC TGTTGATCTT ACGGGAAATC
       1321 ACTATCAGTT CATTCCTTTC GGTTCAGGAA GAAGAATGTG TCCAGGAATG TCGTTTGGTT
       1381 TAGTTAACAC TGGGCATCCT TTAGCTCAGT TGCTCTATCT CTTTGACTGG AAATTCCCTC
       1441 ATAAGGTTAA TGCAGCTGAT TTTCACACTA CTGAAACAAG TAGAGTTTTT GCAGCAAGCA
       1501 AAGATGACCT CTACTTGATT CCAACAAATC ACATGGAGCA AGAGTAGCTC TAAATTGAAT
       1561 TCTTGTCTTG GAACAATAAA AGAAGAAACT CCAGCTTGGT CTACATTATT CCTTTTGCT
       1621 TTATATTAGT ATGGGTGTGT TCAGTCTCTT GTTTTTAAGG GTACCCTGAA AGATAAAGGG
       1681 CTATATAAAC CAGTGAGACT TTTTATTGGT TGCAAGGTTT TAGATCAAGC CATAAGACAG
       1741 CATATTTTAT TCCACCATTT TCTATCATGT TTAATAAAGT TCCTTTCGTT TATTGTTAGA
       1801 AAAAAAAAAA AAAAAAAAAA AAA

SEQ. ID. NO. 208
          1 MDIQSSPFNL IALLLFISFL FILLKKWNTK IPKLPPGPWR LPLIGSLHHL KGKLPHHHLR
         61 DLARKYGPLM YLQLGEVPVV VISSPRIAKA VLKTHDLAFA TRPRFMSSDI VFYKSRDISF
        121 APYGDYWRQM RKILTQELLS NKMLKSFSTI RKDELSKLLS SIRLATASSA VNINEKLLWF
        181 TSCMTCRLAF GKICNDRDEL IMLIREILAL SGGFDVCDLF PSWKLLHNMS NMKARLTNVH
        241 HKYNLIMENI INEHKENHAA GIKGNNEFGG EDMIDALLRV KENNELQFPI ENDNMKAVIL
        301 DLFIAGTETS YTAIIWALSE LMKHPSVMAK AQAEVRKVFK ENENLDENDL DKLPYLKSVI
        361 KETLRMHPPV PLLGPRECRE QTEIDGYTVP LKARVMVNAW AIGRDPESWE DPESFKPERF
        421 ENISVDLTGN HYQFIPFGSG RRMCPGMSFG LVNTGHPLAQ LLYLFDWKFP HKVNAADFHT
        481 TETSRVFAAS KDDLYLIPTN HMEQE

NAME   D209-AA10
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 209
       1 ATATGCAACT GAGATTTGAA GAATACCAAC TAACCAAAAT GCAGTTCTTC AGCCTGGTTT
      61 CCATTTTCCT ATTTCTATCT TTCCTCTTTT TGTTAAGGGT ATGGAAGAAC TCCAATAGCC
     121 AAAGCAAAAA GTTGCCACCA GGTCCATGGA AACTACCAAT ACTAGGAAGT ATGCTTCATA
     181 TGGTTGGTGG ACTACCACAC CATGTCCTTA GAGATTTAGC CAAAAAATAT GGACCACTTA
     241 TGCACCTTCA ATTAGGTGAA GTTTCTGCGG TTGTGGTTAC TTCTCCTGAT ACGGCAAAAG
     301 AAGTATTAAA AACTCATGAC ATCGCTTTTG CGTCTAGGCC TAGCCTTTTG GCCCCGGAGA
     361 TTGTCTGTTA CAATAGGTCT GATCTAGCCT TTTGCCCCTA TGGCGACTAT GGAGACAAA
     421 TGCGTAAAAT ATGTGTCTTG GAAGTGCTCA GTGCCAAGAA TGTTCGGACA TTTAGCTCTA
     481 TTAGGCGGAA TGAAGTTCTT CGTCTCATTA ATTTTATCCG GTCATCTTCT GGTGAACCTA
     541 TTAATGTTAC GGAAAGGATC TTTTTGTTCA CAAGCTCCAT GACATGTAGA TCAGCGTTTG
     601 GGCAAGTGTT CAAAGAGCAA GACAAATTTA TACAACTAAT TAAAGAAGTG ATACTCTTAG
     661 CAGGAGGGTT TGATGTGGCT GACATATTCC CTTCACTGAA GTTTCTTCAT GTGCTCAGTG
     721 GAATGAAGGG TAAGATTATG AATGCACACC ATAAGGTAGA TGCCATTGTT GAGAATGTCA
     781 TCAATGAGCA CAAGAAAAAT CTTGCAATTG GGAAAACTAA TGGAGCGTTA GGAGGTGAAG
     841 ATTTAATTGA TGTTCTTCTA AGACTTATGA ATGATGGAGG CCTTCAATTT CCTATCACCA
     901 ACGACAACAT CAAAGCTATA ATTTTTGACA TGTTTGCTGC CGGGACAGAG ACTTCATCGT
     961 CAACAATTGT GTGGGCTATG GTAGAAATGG TGAAAAATCC AGCCGTATTC GCGAAAGCTC
    1021 AAGCAGAAGT AAGAGAAGCA TTTAGAGGAA AGAAACTTTC GATGAAAAT GATGTGGAGG
    1081 AGCTAAACTA CCTAAAGTTA GTAATAAAAG AAACTCTAAG ACTTCATCCA CCGGTTCCAC
    1141 TTTTGCTCCC AAGAGAATGT AGGGAAGAGA CAAATATAAA CGGCTACACT ATTCCTGTAA
    1201 AGACCAAAGT CATGGTTAAT GTTTGGGCTT TGGGAAGAGA TCCAAAATAT TGGAATGACG
    1261 CAGAAACTTT TATGCCAGAG AGATTTGAGC AGTGCTCTAA GGATTTTGTT GGTAATAATT
    1321 TTGAATATCT TCCATTTGGT GGCGGAAGGA GGATTTGTCC TGGGATTTCG TTTGGCTTAG
    1381 CTAATGCTTA TTTGCCATTG GCTCAATTAC TATATCACTT CGATTGGAAA CTCCCTGCTG
    1441 GAATCGAACC AAGCGACTTG GACTTGACTG AGTTGGTTGG AGTAACTGCC GCTAGAAAAA
    1501 GTGACCTTTA CTTGGTTGCG ACTCCTTATC AACCTCCTCA AAAGTGATTT AATGGTTTCA
    1561 AGTTTTTATT TCCTAGCAAA CCCCACTATT GTCCTATCTT TCTTTTGGTG TTTTCGGTTT
    1621 TATCTACTCT AATACATGCA TCTTTTACCA TATAGGAATG TACCATGTTG TCG

SEQ. ID. NO. 210
       1 MQLRFEEYQL TKMQFFSLVS IFLFLSFLFL LRVWKNSNSQ SKKLPPGPWK LPILGSMLHM
      61 VGGLPHHVLR DLAKKYGPLM HLQLGEVSAV VVTSPDTAKE VLKTHDIAFA SRPSLLAPEI
     121 VCYNRSDLAF CPYGDYWRQM RKICVLEVLS AKNVRTFSSI RRNEVLRLIN FIRSSSGEPI
     181 NVTERIFLFT SSMTCRSAFG QVFKEQDKFI QLIKEVILLA GGFDVADIFP SLKFLHVLSG
     241 MKGKIMNAHH KVDAIVENVI NEHKKNLAIG KTNGALGGED LIDVLLRLMN DGGLQFPITN
     301 DNIKAIIFDM FAAGTETSSS TIVWAMVEMV KNPAVFAKAQ AEVREAFRGK ETFDENDVEE
     361 LNYLKLVIKE TLRLHPPVPL LLPRECREET NINGYTIPVK TKVMVNVWAL GRDPKYWNDA
     421 ETFMPERFEQ CSKDFVGNNF EYLPFGGGRR ICPGISFGLA NAYLPLAQLL YHFDWKLPAG
     481 IEPSDLDLTE LVGVTAARKS DLYLVATPYQ PPQK

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NAME          D209-AA12
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 211
      1 ATATGCAACT GAGATTTGAA GAATACCAAC TAACCAAAAT GCAGTTCTTC AGCTTGGTTT
     61 CCATTTTCCT ATTTCTATCT TTCCTCTTTT TGTTAAGGAT ATGGAAGAAC TCCAATAGCC
    121 AAAGCAAAAA GTTGCCACCA GGTCCATGGA AACTACCAAT ACTAGGAAGT ATGCTTCATA
    181 TGGTTGGTGG ACTACCACAC CATGTCCTTA GAGATTTAGC CAAAAAATAT GGACCACTTA
    241 TGCACCTTCA ATTAGGTGAA GTTTCTGCGG TTGTGGTTAC TTCTCCTGAT ACGGCAAAAG
    301 AAGTATTAAA AACTCATGAC ATCGCTTTTG CGTCTAGGCC TAGCCTTTTG GCCCCGGAGA
    361 TTGTCTGTTA CAATAGGTCT GATCTAGCCT TTTGCCCCTA TGGCGACTAT GGAGACAAA
    421 TGCGTAAAAT ATGTGTCTTG GAAGTGCTCA GTGCCAAGAA TGTTCGGACA TTTAGCTCTA
    481 TTAGGCGGAA TGAAGTTCTT CGTCTCATTA ATTTTATCCG GTCATCTTCT GGTGAACCTA
    541 TTAATGTTAC GGAAAGGATC TTTTTGTTCA CAAGCTCCAT GACATGTAGA TCAGCGTTTG
    601 GGCAAGTGTT CAAAGAGCAA GACAAATTTA TACAACTAAT TAAAGAAGTG ATACTCTTAG
    661 CAGGAGGGTT TGATGTGGCT GACATATTCC CTTCACTGAA GTTTCTTCAT GTGCTCAGTG
    721 GAATGAAGGG TAAGATTATG AATGCACACC ATAAGGTAGA TGCCATTGTT GAGAATGTCA
    781 TCAATGAGCA CAAGAAAAAT CTTGCAATTG GGAAAACTAA TGGAGCGTTA GGAGGTGAAG
    841 ATTTAATTGA TGTTCTTCTA AGACTTATGA ATGATGGAGG CCTTCAATTT CCTATCACCA
    901 ACGACAACAT CAAAGCCATA ATTTTTGACA TGTTTGCTGC CGGGACAGAG ACTTCATCGT
    961 CAACAATTGT GTGGGCTATG GTAGAAATGG TGAAAAATCC AGCCGTATTC GCGAAAGCTC
   1021 AAGCAGAAGT AAGAGAAGCA TTTAGAGGAA AAGAAACTTT CGATGAAAAT GATGTGGAGG
   1081 AGCTAAACTA CCTAAAGTTA GTAATAAAAG AAACTCTAAG ACTTCATCCA CCGGTTCCAC
   1141 TTTTGCTCCC AAGAGAATGT AGGGAAGAGA CAAATATAAA CGGCTACACT ATTCCTGTAA
   1201 AGACCAAAGT CATGGTTAAT GTTTGGGCTT TGGGAAGAGA TCCAAAATAT TGGAATGACG
   1261 CAGAAACTTT TATGCCAGAG AGATTTGAGC AGTGCTCTAA GGATTTGTT GGTAATAATT
   1321 TTGAATATCT TCCATTTGGT GGCGGAAGGA GGATTTGTCC TGGGATTTCG TTTGGCTTAG
   1381 CTAATGCTTA TTTGCCATTG GCTCAATTAC TATATCACTT CGATTGGAAA CTCCCTGCTG
   1441 GAATCGAACC AAGCGACTTG GACTTGACTG AGTTGGTTGG AGTAACTGCC GCTAGAAAAA
   1501 GTGACCTTTA CTTGGTTGCG ACTCCTTATC AACCTCCTCA AAAGTGATTT AATGGTTTCA
   1561 AGTTTTTATT TCCTAGCAAA CCCCACTATT GTCCTATCTT TCTTTTGGTG TTTTCGGTTT
   1621 TATCTACTCT AATACATGCA TCTTTTACCA TATAGGAATG TACCATGTTG TCG
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SEQ. ID. NO. 212
      1 MQLRFEEYQL TKMQFFSLVS IFLFLSFLFL LRIWKNSNSQ SKKLPPGPWK LPILGSMLHM
     61 VGGLPHHVLR DLAKKYGPLM HLQLGEVSAV VVTSPDTAKE VLKTHDIAFA SRPSLLAPEI
    121 VCYNRSDLAF CPYGDYWRQM RKICVLEVLS AKNVRTFSSI RRNEVLRLIN FIRSSSGEPI
    181 NVTERIFLFT SSMTCRSAFG QVFKEQDKFI QLIKEVILLA GGFDVADIFP SLKFLHVLSG
    241 MKGKIMNAHH KVDAIVENVI NEHKKNLAIG KTNGALGGED LIDVLLRLMN DGGLQFPITN
    301 DNIKAIIFDM FAAGTETSSS TIVWAMVEMV KNPAVFAKAQ AEVREAFRGK ETFDENDVEE
    361 LNYLKLVIKE TLRLHPPVPL LLPRECREET NINGYTIPVK TKVMVNVWAL GRDPKYWNDA
    421 ETFMPERFEQ CSKDFVGNNF EYLPFGGGRR ICPGISFGLA NAYLPLAQLL YHFDWKLPAG
    481 IEPSDLDLTE LVGVTAARKS DLYLVATPYQ PPQK
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NAME        D209-AH10
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 213
      1 ATATGCAACT GAGATTTGAA GAATACCAAC TAACCAAAGT GCAGTTCTTC AGCTTGGTTT
     61 CCATTTTCCT ATTTCTATCT TTCCTCTTTT TGTTAAGGAT ATGGAAGAAC TCCAATAGCC
    121 AAAGCAAAAA GTTGCCACCA GGTCCATGGA AACTACCAAT ACTAGGAAGT ATGCTTCATA
    181 TGGTTGGTGG ACTACCACAC CATGTCCTTA GAGATTTAGC CAAAAAATAT GGACCACTTA
    241 TGCACCTTCA ATTAGGTGAA GTTTCTGCGG TTGTGGTTAC TTCTCCTGAT ACGGCAAAAG
    301 AAGTATTAAA AACTCATGAC ATCGCTTTTG CGTCTAGGCC TAGCCTTTTG GCCCCGGAGA
    361 TTGTCTGTTA CAATAGGTCT GATCTAGCCT TTTGCCCCTA TGGCGACTAT TGGAGACAAA
    421 TGCGTAAAAT ATGTGTCTTG GAAGTGCTCA GTGCCAAGAA TGTTCGGACA TTTAGCTCTA
    481 TTAGGCGGAA TGAAGTTCTT CGTCTCATTA ATTTTATCCG GTCATCTTCT GGTGAACCTA
    541 TTAATGTTAC GGAAAGGATC TTTTTGTTCA CAAGCTCCAT GACATGTAGA TCAGCGTTTG
    601 GGCAAGTGTT CAAAGAGCAA GACAAATTTA TACAACTAAT TAAAGAAGTG ATACTCTTAG
    661 CAGGAGGGTT TGATGTGGCT GACATATTCC CTTCACTGAA GTTTCTTCAT GTGCTCAGTG
    721 GAATGAAGGG TAAGATTATG AATGCACACC ATAAGGTAGA TGCCATTGTT GAGAATGTCA
    781 TCAATGAGCA CAAGAAAAAT CTTGCAATTG GGAAAACTAA TGGAGCGTTA GGAGGTGAAG
    841 ATTTAATTGA TGTTCCTCTA AGACTTATGA ATGATGGAGG CCTTCAATTT CCTATCACCA
    901 ACGACAACAT CAAAGCTATA ATTTTTGACA TGTTTGCTGC CGGGACGGAG ACTTCATCGT
    961 CAACAATTGT GTGGGCTATG GTAGAAATGG TGAAAAATCC AGCCGTATTC GCGAAAGCTC
   1021 AAGCAGAAGT AAGAGAAGCA TTTAGAGGAA AAGAAACTTT CGATGAAAAT GATGTGGAGG
   1081 AGCTAAACTA CCTAAAGTTA GTAATAAAAG AAACTCTAAG ACTTCATCCA CCGGTTCCAC
   1141 TTTTGCTCCC AAGAGAATGT AGGGAAGAGA CAAATATAAA CGGCTACACT ATTCCTGTAA
   1201 AGACCAAAGT CATGGTTAAT GTTTGGGCTT TGGGAAGAGA TCCAAAATAT TGGAATGACG
   1261 CAGAAACTTT TATGCCAGAG AGATTTGAGC AGTGCTCTAA GGATTTTGTT GGTAATAATT
   1321 TTGAATATCT TCCATTTGGT GGCGGAAGGA GGATTTGTCC TGGGATTTCG TTTGGCTTAG
   1381 CTAATGCTTA TTTGCCATTG GCTCAATTAC TATATCACTT CGATTGGAAA CTCCCTGCTG
   1441 GAATCGAACC AAGCGACTTG GACTTGACTG AGTTGGTTGG AGTAACTGCC GCTAGAAAAA
   1501 GTGACCTTTA CTTGGTTGCG ACTCCTTATC AACCTCCTCA AAAGTGATTT AATGGTTTCA
   1561 AGTTTTTATT TCCTAGCAAA CCCCACTATT GTCCTATCTT TCTTTTGGTG TTTTCGGTTT
   1621 TATCTACTCT AATACATGCA TCTTTTACCA TATAGGAATG TACCATGTTG TCG
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SEQ. ID. NO. 214
      1 MQLRFEEYQL TKVQFFSLVS IFLFLSFLFL LRIWKNSNSQ SKKLPPGPWK LPILGSMLHM
     61 VGGLPHHVLR DLAKKYGPLM HLQLGEVSAV VVTSPDTAKE VLKTHDIAFA SRPSLLAPEI
    121 VCYNRSDLAF CPYGDYWRQM RKICVLEVLS AKNVRTFSSI RRNEVLRLIN FIRSSSGEPI
    181 NVTERIFLFT SSMTCRSAFG QVFKEQDKFI QLIKEVILLA GGFDVADIFP SLKFLHVLSG
    241 MKGKIMNAHH KVDAIVENVI NEHKKNLAIG KTNGALGGED LIDVPLRLMN DGGLQFPITN
    301 DNIKAIIFDM FAAGTETSSS TIVWAMVEMV KNPAVFAKAQ AEVREAFRGK ETFDENDVEE
    361 LNYLKLVIKE TLRLHPPVPL LLPRECREET NINGYTIPVK TKVMVNVWAL GRDPKYWNDA
    421 ETFMPERFEQ CSKDFVGNNF EYLPFGGGRR ICPGISFGLA NAYLPLAQLL YHFDWKLPAG
    481 IEPSDLDLTE LVGVTAARKS DLYLVATPYQ PPQK
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NAME        D87A-AF3
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 215
       1 GAAATGGGAA ATGCTCACAA CAGCAAAATT GCAGCAATCT GTTTGATAAT TTTCTTGGTA
      61 TATAAAGCAT GGGAATTGTT GAAGTGGATA TGGATTAAGC CAAAGAAACT GGAGAGTTGC
     121 CTCAGAAAAC AGGGACTCAA AGGAAATTCC TACAGGCTAT TCTATGGAGA TATGAAAGAA
     181 TTGTCCAAAA GTCTCAAGGA AATCAATTCA AAGCCCATCA TCAATCTATC AAATGAAGTA
     241 GCCCCAAGAA TCATTCCTTA TTATCTTGAA ATCATCCAAA AATATGGTAA AAGATGTTTT
     301 GTTTGGCAAG GACCAACCCC CGCAATATTA ATAACAGAGC CAGAATTAAT AAAGGAGATA
     361 TTTGGTAAGA ACTATGTTTT TCAGAAGCCT AATAATCCCA ACCCACTGAC CAAGTTATTG
     421 GCTCGAGGTG TTGTAAGCTA CGAGGAAGAA AAATGGGCAA AACACAGAAA GATCTTAAAC
     481 CCTGCCTTTC ATATGGAGAA GTTGAAGCAT ATGCTACCAG CATTTTACTT GAGCTGTAGT
     541 GAGATGCTGA ACAAATGGGA GGAGATTATC CCAGTAAAAG AATCAAATGA GTTGGACATT
     601 TGGCCTCATC TTCAAAGAAT GACAAGTGAT GTGATTTCTC GTGCTGCCTT TGGTAGTAGC
     661 TACGAAGAAG GAAGAAGAAT ATTTGAACTT CAAGAAGAAC AAGCTGAGTA TCTAACGAAG
     721 ACATTCAATT CAGTTTATAT CCCAGGTTCC AGATTTTTTC CCAATAAAAT GAACAAAAGA
     781 ATGAAAGAAT GTGAAAAGGA AGTACGAGAA ACAATTACGT GTCTAATTGA CAACAGATTA
     841 AAGGCAAAAG AAGAAGGCAA TGGCAAGGCC CTCAATGATG ACCTACTGGG TATATTATTA
     901 GAGTCAAATT CTATAGAAAT TGAAGAACAT GGTAACAAGA AGTTTGGAAT GAGTATACCT
     961 GAAGTAATTG AAGAGTGCAA ATTATTCTAT TTTGCTGGCC AAGAGACTAC ATCAGTATTG
    1021 CTTGTGTGGA CACTGATTTT GTTAGGGAGA AATCCAGAAT GGCAGGAACG TGCTAGAGAG
    1081 GAAGTTTTTC AAGCCTTTGG AAGTGATAAA CCAACTTTTG ACGAATTATA TCGCTTGAAA
    1141 ATTGTGACGA TGATTTTGTA CGAGTCTTTA AGGTTATATC CACCAATAGC AACTCGTACT
    1201 CGAAGGACTA ATGAAGAAAC AAAATTAGGG GAACTAGATT TACCAAAGGG TGCACTGCTC
    1261 TTTATACCAA CAATCTTATT ACATCTTGAC AAGGAAATTT GGGGTGAAGA TGCAGATGAG
    1321 TTCAATCCGG AGAGATTTAG CGAAGGGGTG GCAAAGGCAA CAAAGGGGAA AATGACATAT
    1381 TTTCCATTTG GTGCAGGACC GCGAAAATGC ATTGGGCAAA ACTTCGCGAT TTTGGAAGCA
    1441 AAAATGGCTA TAGCTATGAT TCTACAACGC TTCTCCTTCG AGCTCTCTCC ATCTTATACA
    1501 CACTCTCCAT ACACTGTGGT CACTTTGAAA CCCAAATATG GTGCTCCCCT AATAATGCAC
    1561 AGGCTGTAGT CCTGTGAGAA
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SEQ. ID. NO. 216

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       1 MGNAHNSKIA AICLIIFLVY KAWELLKWIW IKPKKLESCL RKQGLKGNSY RLFYGDMKEL
      61 SKSLKEINSK PIINLSNEVA PRIIPYYLEI IQKYGKRCFV WQGPTPAILI TEPELIKEIF
     121 GKNYVFQKPN NPNPLTKLLA RGVVSYEEEK WAKHRKILNP AFHMEKLKHM LPAFYLSCSE
     181 MLNKWEEIIP VKESNELDIW PHLQRMTSDV ISRAAFGSSY EEGRRIFELQ EEQAEYLTKT
     241 FNSVYIPGSR FFPNKMNKRM KECEKEVRET ITCLIDNRLK AKEEGNGKAL NDDLLGILLE
     301 SNSIEIEEHG NKKFGMSIPE VIEECKLFYF AGQETTSVLL VWTLILLGRN PEWQERAREE
     361 VFQAFGSDKP TFDELYRLKI VTMILYESLR LYPPIATRTR RTNEETKLGE LDLPKGALLF
     421 IPTILLHLDK EIWGEDADEF NPERFSEGVA KATKGKMTYF PFGAGPRKCI GQNFAILEAK
     481 MAIAMILQRF SFELSPSYTH SPYTVVTLKP KYGAPLIMHR L
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NAME          D208-AC8
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 217
      1 ATGCTTTCTC CCATAGAAGC CTTTGTAGGA CTAGTAACCT TCACATTTCT CTTATACTTC
     61 CTATGGACAA AAAAATCTCA AAAACTTCCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
    121 TGGCCGGTAA TCGGCCATCT TTTTCACTTC AATAACGACG GCGACGACCG TCCATTAGCT
    181 CGAAAGCTCG GAGACTTAGC TGATAAATAC GGCCCCGTTT TCACTTTTCG GCTAGGTCTT
    241 CCCCTTGTGC TAGTTGTAAG CAGTTACGAA GCTATAAAAG ATTGCTTCTC TACAAATGAT
    301 GCCATTTTCT CCAATCGTCC AGCTCTTCTT TACGGCGAAT ACCTTGGCTA CAATAATACA
    361 ATGCTTTTTC TAGCAAATTA CGGACCTTAC TGGCGAAAAA ATCGTAAATT AGTCATTCAG
    421 GAAGTTCTCT CTGCTAGTCG TCTCGAAAAA TTCAAACAAG TGAGATTCAC CAGAATTCAA
    481 ACGAGCATTA AGAATTTATA CACTCGAATT AATGGAAATT CGAGTACGAT AAATCTAACT
    541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG ATCGTGAAAA TGATCGCTGG GAAAAATTAT
    601 GAATCCGGTA AAGGAGATGA ACAAGTGGAA AGATTTAAGA ATGCGTTTAA GGATTTTATG
    661 GTTTTATCAA TGGAATTTGT ATTATGGGAT GCATTCCAA TTCCATTATT TAAATGGGTG
    721 GATTTTCAAG GTCATATTAA GGCAATGAAA AGGACATTTA AGGATATAGA TTCTGTTTTT
    781 CAGAACTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TAGAGGTTGG TGCAGAAGGG
    841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAATTGA GTAAAGAATA TCTTGATGAA
    901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACAGTTTTTA GTTTGGTCTT GGATGCAGCA
    961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGACATTAT TGATAAACAA TCAAAATGCC
   1021 TTGATGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGATAGATG GGTAGAAGAG
   1081 AGTGATATTA AGGATTTAGT ATACCTCCAA GCTATTGTTA AAAAGGTGTT ACGATTATAT
   1141 CCACCAGGAC CTTTGTTAGT ACCACATGAA AATGTAAAGG ATTGTGTTGT TAGTGGATAT
   1201 CACATTCCTA AAGGGACTAG ATTATTCGCA AACGTCATGA AACTGCAGCG CGATCCTAAA
   1261 CTCTTGTCAA ATCCTGATAA GTTCGATCCA GAGAGATTCA TCGCTGGTGA TATTGACTTC
   1321 CGTGGTCACC ACTATGAGTT TATCCCATTT GGTTCTGGAA GACGATCTTG TCCGGGGATG
   1381 ACTTATGCAT TGCAAGTGGA ACACCTAACA ATGGCACATT TAATCCAGGG TTTCAATTAC
   1441 AAAACTCCAA ATGACGAGGC CTTGGATATG AAGGAAGGTG CAGGCATAAC AATACGTAAG
   1501 GTAAATCCAG TGGAATTGAT AATAACGCCT CGCTTGGCAC CTGAGCTTTA CTAAAACCTA
   1561 AGATGTTTCA TCTTGGTTGA TCATTGT

SEQ. ID. NO. 218
      1 MLSPIEAFVG LVTFTFLLYF LWTKKSQKLP KPLPPKIPGG WPVIGHLFHF NNDGDDRPLA
     61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AIKDCFSTND AIFSNRPALL YGEYLGYNNT
    121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKQVRFTRIQ TSIKNLYTRI NGNSSTINLT
    181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKNAFKDFM VLSMEFVLWD AFPIPLFKWV
    241 DFQGHIKAMK RTFKDIDSVF QNWLEEHINK REKIEVGAEG NEQDFIDVVL SKLSKEYLDE
    301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MTLLINNQNA LMKAQEEIDT KVGKDRWVEE
    361 SDIKDLVYLQ AIVKKVLRLY PPGPLLVPHE NVKDCVVSGY HIPKGTRLFA NVMKLQRDPK
    421 LLSNPDKFDP ERFIAGDIDF RGHHYEFIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
    481 KTPNDEALDM KEGAGITIRK VNPVELIITP RLAPELY
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NAME          D215-AB5
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 219
        1 GGGAGAAGGC CTTCAATATG GAGATACCAT ATTACAGCTT AAAAATTGCA ATTTCTTCAT
       61 TTGCAATTAT CTTTGTACTA AGATGGGCAT GGAAAATCTT GAATTATGTG TGGTTAAAAC
      121 CAAAAGAATT GGAGAAATAC CTCAGACAGC AGGGTTTCAA AGGAAACTCT TACAAATTCT
      181 TGTTTGGGGA TATGAAAGAG ACGAAGAAAA TGGGTGAAGA AGCTATGTCT AAGCCAATCA
      241 ATTTCTCTCA TGACATGATT TGGCCTAGAG TTATGCCATT CATCCACAAA ACCATCACCA
      301 ATTATGGTAA GAATTGTATT GTGTGGTTTG GGCCAAGACC AGCAGTCCTG ATCACAGACC
      361 CGGAACTTGT AAAGGAGGTG CTAACGAAGA ATTTCGTCTA TCAGAAGCCG CTTGGCAATC
      421 CACTCACAAA GTTGGCAGCA ACTGGAATTG CAGGCTATGA AACAGATAAA TGGGCTACAC
      481 ATAGAAGGCT TCTCAATCCT GCTTTTCACC TTGACAAGTT GAAGCATATG CTACCTGCAT
      541 TCCAATTTAC TGCTAGTGAG ATGTTGAGCA AATTGGAGAA AGTTGTTTCA CCAAACGGAA
      601 CAGAGATAGA TGTGTGGCCA TATTTACAAA CTTTGACAAG TGATGCCATT TCAAGAACTG
      661 CGTTTGGAAG TAGTTATGAA GAAGGAAGAA AGATTTTTGA CCTTCAAAAA GAACAACTTT
      721 CACTAATTCT AGAAGTTTCA CGCACAATAT ATATTCCAGG ATGGAGGTTT TTGCCAACGA
      781 AAAGGAACAA AAGGATGAAG CAAATATTTA ATGAAGTACG AGCACTGGTA TTTGGAATTA
      841 TTAAGAAAAG GATGAGTATG ATTGAAAATG GAGAAGCACC TGATGATTTA TTGGGAATAT
      901 TATTGGCATC CAATTTAAAA GAAATCCAAC AACATGGAAA CAACAAGAAA TTTGGTATGA
      961 GTATTGATGA GGTGATTGAA GAGTGTAAAC TCTTCTATTT TGCTGGGCAA GAGACTACTT
     1021 CATCTTTACT TGTATGGACT ATGATTTTGT TGTGCAAATA TCCTAATTGG CAAGATAAAG
     1081 CTAGAGAAGA GGTTTTGCAA GTGTTTGGGA GTAGGGAAGT TGACTATGAC AAGTTGAATC
     1141 AGCTAAAAAT AGTAACTATG ATCTTAAACG AGGTCTTAAG GTTGTATCCA GCAGGATATG
     1201 TGATTAATCG AATGGTAAAC AAAGAAACAA AGTTAGGGAA TTTGTGTTTA CCAGCCGGCG
     1261 TACAGCTCGT GTTACCAACA ATGTTGTTGC AACATGATAC TGAAATATGG GGAGATGATG
     1321 CAATGGAGTT CAATCCAGAG AGATTTAGTG ATGGAATATC CAAAGCAACA AAAGGAAAAC
     1381 TTGTGTTTTT TCCATTTAGT TGGGGTCCAA GAATATGTAT TGGGCAAAAT TTTGCTATGT
     1441 TAGAGGCTAA AATGGCAATG GCTATGATTC TGAAAACCTA TGCATTTGAA CTCTCTCCAT
     1501 CTTATGCTCA TGCTCCTCAT CCACTACTAC TTCAACCTCA ATATGGTGCT CAATTAATTT
     1561 TGTACAAGTT GTAGATATGG TCAATCTGGA ACTTGTTATG GAACTTTTAT CATCGTAATC
     1621 AACCATATTG AGGG

SEQ. ID. NO. 220
        1 MEIPYYSLKI AISSFAIIFV LRWAWKILNY VWLKPKELEK YLRQQGFKGN SYKFLFGDMK
       61 ETKKMGEEAM SKPINFSHDM IWPRVMPFIH KTITNYGKNC IVWFGPRPAV LITDPELVKE
      121 VLTKNFVYQK PLGNPLTKLA ATGIAGYETD KWATHRRLLN PAFHLDKLKH MLPAFQFTAS
      181 EMLSKLEKVV SPNGTEIDVW PYLQTLTSDA ISRTAFGSSY EEGRKIFDLQ KEQLSLILEV
      241 SRTIYIPGWR FLPTKRNKRM KQIFNEVRAL VFGIIKKRMS MIENGEAPDD LLGILLASNL
      301 KEIQQHGNNK KFGMSIDEVI EECKLFYFAG QETTSSLLVW TMILLCKYPN WQDKAREEVL
      361 QVFGSREVDY DKLNQLKIVT MILNEVLRLY PAGYVINRMV NKETKLGNLC LPAGVQLVLP
      421 TMLLQHDTEI WGDDAMEFNP ERFSDGISKA TKGKLVFFPF SWGPRICIGQ NFAMLEAKMA
      481 MAMILKTYAF ELSPSYAHAP HPLLLQPQYG AQLILYKL
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NAME          D103-AH3
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 221
      1 ATGGTTTTTC CCATAGAAGC CTTTGTAGGA CTAGTAACCT TCACATTTCT CTTATACTTC
     61 CTATGGACAA AAAAATCTCA AAAACTTCCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
    121 TGGCCGGTAA TCGGCCACCT TTTTCACTTC AATAACGACG GCGACGACCG TCCATTAGCT
    181 CGAAAACTCG GAGACTTAGC TGATAAATAC GGCCCCGTTT TCACTTTTCG CTAGGTCTT
    241 CCCCTTGTGC TAGTTGTAAG CAGTTACGAA GCTACAAAAG ATTGCTTCTC TACAAATGAC
    301 GCCATTTTCT CCAATCGTCC AGCTTTTCTT TACGGCGAAT ACCTTGGCTA CAATAATACA
    361 ATGCTTTTTC TAGCAAATTA CGGACCTTAC TGGCGAAAAA ATCGTAAATT AGTCATTCAG
    421 GAAGTTCTCT CTGCTAGTCG TCTCGAAAAA TTCAAACAAG TGAGATTCAC CAGAATTCAA
    481 ACGAGCATTA AGAATTTATA CACTCGAATT AATGGAAATT CGAGTACGAT AAATCTAACT
    541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG ATCGTGAAAA TGATCGCTGG AAAAATTAT
    601 GAATCCGGTA AAGGAGATGA ACAAGTGGAA AGATTTAAGA ATGCGTTTAA GGATTTTATG
    661 GTTTTATCAA TGGAATTTGT ATTATGGGAT GCATTCCAA TTCCATTATT TAAATGGGTG
    721 GATTTTCAAG GTCATATTAA GACAATGAAA AGGACATTTA AGGATATAGA TTCTGTTTTT
    781 CAGAACTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTGG TGCAGAAGGG
    841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAATTGA GTAAAGAATA TCTTGATGAA
    901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACAGTTTTA GTTTGGTCTT GGATGCAGCA
    961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGACATTAT TGATAAACAA TCAAAATGCC
   1021 TTGATGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGATAGATG GGTAGAAGAG
   1081 AGTGATATTA AGGATTTAGT ATACCTCCAA GCTATTGTTA AAAAGGTGTT ACGATTATAT
   1141 CCACCAGGAC CTTTGTTAGT ACCACATGAA AATGTAAAGG ATTGTGTTGT TAGTGGATAT
   1201 CACATTCCTA AAGGGACTAG ATTATTCGCA AACGTCATGA AACTGCAGCG CGATCCTAAA
   1261 CTCTTGTCAA ATCCTGATAA GTTCGATCCA GAGAGATTCA TCGCTGGTGA TATTGACTTC
   1321 CGTGGTCACC ACTATGAGTT TATCCCATCT GGTTCTGGAA GACGATCTTG TCCGGGGATG
   1381 ACTTATGCAT TGCAAGTGGA ACACCTAACA ATGGCACATT TAATCCAGGG TTTCAATTAC
   1441 AAAACTCCAA ATGACGAGGT CTTGGATATG AAGGAAGGTG CAGGCATAAC AATACGTAAG
   1501 GTAAATCCAG TGGAATTGAT AATAACGCCT CGCTTGGCAC CTGAGCTTTA CTAAAACCTA
   1561 AGATCTTTCA TCTTGGTTGA TCATTGTTTA ATA

SEQ. ID. NO. 222
      1 MVFPIEAFVG LVTFTFLLYF LWTKKSQKLP KPLPPKIPGG WPVIGHLFHF NNDGDDRPLA
     61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE ATKDCFSTND AIFSNRPAFL YGEYLGYNNT
    121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKQVRFTRIQ TSIKNLYTRI NGNSSTINLT
    181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKNAFKDFM VLSMEFVLWD AFPIPLFKWV
    241 DFQGHIKTMK RTFKDIDSVF QNWLEEHINK REKMEVGAEG NEQDFIDVVL SKLSKEYLDE
    301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MTLLINNQNA LMKAQEEIDT KVGKDRWVEE
    361 SDIKDLVYLQ AIVKKVLRLY PPGPLLVPHE NVKDCVVSGY HIPKGTRLFA NVMKLQRDPK
    421 LLSNPDKFDP ERFIAGDIDF RGHHYEFIPS GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
    481 KTPNDEVLDM KEGAGITIRK VNPVELIITP RLAPELY
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NAME          D208-AD9
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 223
         1 ATGCTTTCTC CCATAGAAGC CATTGTAGGA CTAGTAACCT TCACATTTCT CTTCTTCTTC
        61 CTATGGACAA AAAAATCTCA AAAACCTTCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
       121 TGGCCGGTAA TCGGCCATCT TTTCCACTTC AATGACGACG GCGACGACCG TCCATTAGCT
       181 CGAAAACTCG GAGACTTAGC TGACAAATAC GGCCCCGTTT TCACTTTTCG GCTAGGCCTT
       241 CCCCTTGTCT TAGTTGTAAG CAGTTACGAA GCTGTAAAAG ACTGTTTCTC CACAAATGAC
       301 GCCATTTTTT CCAATCGTCC AGCTTTTCTT TACGGCGATT ACCTTGGCTA CAATAATGCC
       361 ATGCTATTTT TGGCCAATTA CGGACCTTAC TGGCGAAAAA ATCGAAAATT AGTTATTCAG
       421 GAAGTTCTCT CCGCTAGTCG TCTCGAAAAA TTCAAACACG TGAGATTTGC AAGAATTCAA
       481 GCGAGCATGA AGAATTTATA TACTCGAATT GATGGAAATT CGAGTACGAT AAATTTAACT
       541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG ATCGTGAAGA TGATCGCTGG AAAAAATTAT
       601 GAATCCGGTA AAGGAGATGA ACAAGTGGAG AGATTAAGA AAGCGTTTAA GGATTTTATG
       661 ATTTTATCAA TGGAGTTTGT GTTATGGGAT GCATTCCAA TTCCATTATT TAAATGGGTG
       721 GATTTTCAAG GGCATGTTAA GGCTATGAAA AGGACTTTTA AAGATATAGA TTCTGTTTTT
       781 CAGAATTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTAA TGCAGAAGGG
       841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAAATGA GTAATGAATA TCTTGGTGAA
       901 GGTTACTCTC GTGATACTGT CATTGAAGCA ACGGTGTTTA GTTTGGTCTT GGATGCAGCA
       961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGGCATTAT TGATAAACAA TCAAAAGGCC
      1021 TTGACGAAAG CACAAGAAGA GATAGACACA AAAGTTTGTA AGGACAGATG GGTAGAAGAG
      1081 AGTGATATTA AGGATTTGGT ATACCTCCAA GCTATTGTTA AGAAGTGTT ACGATTATAT
      1141 CCACCAGGAC CTTTGTTAGT ACCACACGAA AATGTAGAAG ATTGTGTTGT TAGTGGATAT
      1201 CACATTCCTA AAGGGACAAG ATTATTCGCA AACGTCATGA AACTGCAACG TGATCCTAAA
      1261 CTCTGGTCTG ATCCTGATAC TTTCGATCCA GAGAGATTCA TTGCTACTGA TATTGACTTT
      1321 CGTGGTCAGT ACTATAAGTA TATCCCGTTT GGTCCTGGAA GACGATCTTG TCCAGGGATG
      1381 ACTTATGCAT TGCAAGTGGA ACACTTAACA ATGGCACATT TGATCCAAGG TTTCAATTAC
      1441 AGAACTCCAA ATGACGAGCC CTTGGATATG AAGGAAGGTG CAGGCATAAC TATACGTAAG
      1501 GTAAATCCTG TGGAACTGAT AATAGCGCCT CGCCTGGCAC CTGAGCTTTA TTAAAACCTA
      1561 AGATGTTTCA TCTTGGTTGA
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SEQ. ID. NO. 224
         1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
        61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
       121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASMKNLYTRI DGNSSTINLT
       181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDFM ILSMEFVLWD AFPIPLFKWV
       241 DFQGHVKAMK RTFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
       301 GYSRDTVIEA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVCKDRWVEE
       361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVMKLQRDPK
       421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GPGRRSCPGM TYALQVEHLT MAHLIQGFNY
       481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
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NAME          D237-AD1
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 225
       1 TTTCATATAC CTTTAGTACT CTTGAAATTT TCAAATAATG GTTTATCTTC TTTCTCCCAT
      61 AGAAGCCATT GTAGGATTTG TAACCTTTTC ATTTCTATTC TACTTTCTAT GGACCAAAAA
     121 ACAATCAAAA ATCTTAAACC CACTACCTCC AAAAATCCCA GGTGGATGGC CAGTAATCGG
     181 CCATCTCTTT TATTTCAAGA ACAATGGCGA TGAAGATCGC CATTTTCTC AAAAACTCGG
     241 TGACTTAGCT GACAAATATG GTCCCGTCTT CACTTTCCGG TTAGGGTTTC GCCGTTTCTT
     301 GGCGGTGAGT AGTTATGAAG CTATGAAAGA ATGCTTCACT ACCAATGATA TCCATTTCGC
     361 CGATCGGCCA TCTTTACTCT ACGGAGAATA CCTTTGCTAT AATAACGCCA TGCTTGCTGT
     421 TGCCAAATAT GGCCCTTACT GGAAAAAAAA TCGAAAGTTA GTCAATCAAG AAGTTCTCTC
     481 CGTTAGTCGG CTCGAAAAAT TCAAACATGT TAGATTTTCT ATAATTCAGA AAAATATTAA
     541 ACAATTGTAT AATTGTGATT CACCAATGGT GAAGATAAAC CTTAGTGATT GGATAGATAA
     601 ATTGACATTC GACATCATTT TGAAAATGGT TGTTGGGAAG AACTATAATA ATGGACATGG
     661 AGAAATACTC AAAGTTGCTT TTCAGAAATT CATGGTTCAA GCTATGGAGA TGGAGCTCTA
     721 TGATGTTTTT CACATTCCAT TTTTCAAGTG GTTGGATCTT ACAGGGAATA TTAAGGCTAT
     781 GAAACAAACT TTCAAAGACA TTGATAATAT TATCCAAGGT TGGTTAGATG AGCACATTAA
     841 GAAGAGAGAA ACAAAGGATG TTGGAGGTGA AAACGAACAA GATTTTATAG ATGTGGTGCT
     901 TTCCAAGATG AGCGACGAAC ATCTTGGCGA GGGTTACTCT CATGACACAA CCATCAAAGC
     961 AACTGTATTC ACTTTGGTCT TGGATGCAAC AGACACACTT GCACTTCATA TAAAGTGGGT
    1021 AATGGCGTTA ATGATAAACA ATAAGCATGT CATGAAGAAA GCACAAGAAG AGATGGACAC
    1081 AATTGTTGGT AGAGATAGAT GGGTAGAAGA GAGTGATATC AAGAATTTGG TGTATCTCCA
    1141 AGCAATTGTC AAAGAAGTAT TACGATTACA TCCACCCGCA CCTTTGTCAG TGCAACACCT
    1201 ATCTGTAGAA GATTGTGTTG TCAATGGGTA CCATATTCCT AAGGGGACTG CACTACTTAC
    1261 CAATATTATG AAACTACAGC GAGATCCTCA AACATGGCCA AATCCTGATA AATTCGATCC
    1321 AGAGAGATTC CTGACGACTC ATGCTACTAT TGACTACCGC GGGCAGCACT ATGAGTCGAT
    1381 CCCCTTTGGT ACGGGGAGAC GAGCTTGTCC CGCGATGAAT TATTCATTGC AAGTGGAACA
    1441 CCTTTCAATT GCTCATATGA TCCAAGGTTT CAGTTTTGCA ACTACGACCA ATGAGCCTTT
    1501 GGATATGAAA CAAGGTGTGG GTTTAACTTT ACCAAAGAAG ACTGATGTTG AAGTGCTAAT
    1561 TACACCTCGC CTTCCTCCTA CGCTTTATCA ATATTAAGAT GTTTGTTGT CGGGATTCGT
    1621 TCTGATCAAT CCCTCAATG

SEQ. ID. NO. 226
       1 MVYLLSPIEA IVGFVTFSFL FYFLWTKKQS KILNPLPPKI PGGWPVIGHL FYFKNNGDED
      61 RHFSQKLGDL ADKYGPVFTF RLGFRRFLAV SSYEAMKECF TTNDIHFADR PSLLYGEYLC
     121 YNNAMLAVAK YGPYWKKNRK LVNQEVLSVS RLEKFKHVRF SIIQKNIKQL YNCDSPMVKI
     181 NLSDWIDKLT FDIILKMVVG KNYNNGHGEI LKVAFQKFMV QAMEMELYDV FHIPFFKWLD
     241 LTGNIKAMKQ TFKDIDNIIQ GWLDEHIKKR ETKDVGGENE QDFIDVVLSK MSDEHLGEGY
     301 SHDTTIKATV FTLVLDATDT LALHIKWVMA LMINNKHVMK KAQEEMDTIV GRDRWVEESD
     361 IKNLVYLQAI VKEVLRLHPP APLSVQHLSV EDCVVNGYHI PKGTALLTNI MKLQRDPQTW
     421 PNPDKFDPER FLTTHATIDY RGQHYESIPF GTGRRACPAM NYSLQVEHLS IAHMIQGFSF
     481 ATTTNEPLDM KQGVGLTLPK KTDVEVLITP RLPPTLYQY
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NAME   D125-AF11
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 227
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        1 CTTTTTCTCC CCAAAAAAGA GCTCATTTCC CTTGTCCCCA AAAATGGATC TTCTCTTACT
       61 AGAGAAGACC TTAATTGGTC TCTTCTTTGC CATTTTAATC GCTATAATTG TCTCTAGACT
      121 TCGTTCAAAG CGTTTTAAGC TTCCCCCAGG ACCAATCCCA GTACCAGTTT TTGGTAATTG
      181 GCTTCAAGTT GGTGATGATT TAAACCACAG AAATCTTACT GATTTTGCCA AAAAATTTGG
      241 TGATCTTTTC TTGTTAAGAA TGGGCCAGCG TAATTTAGTT GTTGTGTCAT CTCCTGAATT
      301 AGCTAAAGAA GTTTTACACA CACAAGGTGT TGAATTTGGT TCAAGAACAA GAAATGTTGT
      361 ATTTGATATT TTTACTGGAA AAGGTCAAGA TATGGTTTTT_ACTGTATATG GTGAACACTG
      421 GAGAAAAATG AGGAGAATTA TGACTGTACC ATTTTTTACT AATAAAGTTG TGCAGCAATA
      481 TAGAGGGGGG TGGGAGTTTG AAGTGGCAAG TGTAATTGAG GATGTGAAGA AAAATCCTGA
      541 ATCTGCTACT AATGGGATTG TATTAAGGAG GAGATTACAA TTGATGATGT ATAATAATAT
      601 GTTTAGGATT ATGTTTGATA GGAGATTTGA GAGTGAAGAT GATCCTTTGT TTGTTAAGCT
      661 TAAGGCTTTG AATGGTGAAA GGAGTAGATT GGCTCAGAGT TTTGAGTATA ATTATGGTGA
      721 TTTTATTCCC ATTTTGAGGC CTTTTTTGAG AGGTTATTTG AAGATCTGTA AAGAAGTTAA
      781 GGAGAAGAGG CTGCAGCTTT TCAAAGATTA CTTTGTTGAT GAAAGAAAGA AGCTTTCAAA
      841 TACCAAGAGC TTGGACAGCA ATGCTCTGAA ATGTGCGATT GATCACATTC TTGAGGCTCA
      901 ACAGAAGGGG GAGATCAATG AGGACAACGT TCTTTACATT GTTGAAAACA TCAATGTTGC
      961 TGCTATAGAA ACCACATTAT GGTCAATTGA GTGGGGTATC GCCGAGTTAG TCAACCACCC
     1021 TCACATCCAA AAGAAACTCC GCGACGAGAT TGACACAGTT CTTGGCCCAG GAGTGCAAGT
     1081 GACTGAACCA GACACCCACA AGCTTCCATA CCTTCAGGCT GTGATCAAGG AGACGCTTCG
     1141 TCTCCGTATG GCAATTCCTC TATTAGTCCC ACACATGAAC CTTCACGATG CAAAGCTTGG
     1201 CGGGTTTGAT ATTCCAGCAG AGAGCAAAAT CTTGGTTAAC GCTTGGTGGC TAGCTAACAA
     1261 CCCGGCTCAT TGGAAGAAAC CCGAAGAGTT CAGACCCGAG AGGTTCTTCG AAGAGGAGAA
     1321 GCACGTTGAG GCCAATGGCA ATGACTTCAG ATATCTTCCG TTTGGCGTTG GTAGGAGGAG
     1381 TTGCCCTGGA ATTATACTTG CATTGCCAAT TCTTGGCATT ACTTTGGGAC GTTTGGTTCA
     1441 GAACTTTGAG CTGTTGCCTC CTCCAGGCCA GTCGAAGCTC GACACCACAG AGAAAGGTGG
     1501 ACAGTTCAGT CTCCATATTT TGAAGCATTC CACCATTGTG TTGAAACCAA GGTCTTGCTG
     1561 AACTTTCTGA TCCTAATCAA TTAAGGGGTT GAAGAAATTT TATAATTATG
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SEQ. ID. NO. 228
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        1 MDLLLLEKTL IGLFFAILIA IIVSRLRSKR FKLPPGPIPV PVFGNWLQVG DDLNHRNLTD
       61 FAKKFGDLFL LRMGQRNLVV VSSPELAKEV LHTQGVEFGS RTRNVVFDIF TGKGQDMVFT
      121 VYGEHWRKMR RIMTVPFFTN KVVQQYRGGW EFEVASVIED VKKNPESATN GIVLRRRLQL
      181 MMYNNMFRIM FDRRFESEDD PLFVKLKALN GERSRLAQSF EYNYGDFIPI LRPFLRGYLK
      241 ICKEVKEKRL QLFKDYFVDE RKKLSNTKSL DSNALKCAID HILEAQQKGE INEDNVLYIV
      301 ENINVAAIET TLWSIEWGIA ELVNHPHIQK KLRDEIDTVL GPGVQVTEPD THKLPYLQAV
      361 IKETLRLRMA IPLLVPHMNL HDAKLGGFDI PAESKILVNA WWLANNPAHW KKPEEFRPER
      421 FFEEEKHVEA NGNDFRYLPF GVGRRSCPGI ILALPILGIT LGRLVQNFEL LPPPGQSKLD
      481 TTEKGGQFSL HILKHSTIVL KPRSC
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NAME          D134-AE11
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 229
      1 AACAATAAAA ATGGAGACAT TATTTAACAT CAAAGTTGCA GTTTCATTAG TAATTGTGAT
     61 AATTTTTCTG AGATGGGTAT GGAAATTCTT GAATTGGGTG TGGATTCAAC CAAAGAAAAT
    121 GGAAAAAAGA CTAAAAATGG AAGGTTTCAA AGGAAGCTCA TATAAGCTAT TATTTGGAGA
    181 TATGAAAGAA ATAAATACAA TGGTTGAAGA AGCCAAAACC AAGCCTATGA ATTTTACCAA
    241 TGATTATGTG GCTAGAGTCT TGCCTCACTT CACAAAGTTG ATGCTCCAAT ATGGCAAGAA
    301 TAGCTTTATG TGGTTAGGGC CAAAACCAAC AATGTTTATC ACAGACCCTG AACTAATAAG
    361 GGAGATCTTG TCAAAAAGTT ACATATACCA GGAGATTCAA GGCAATCCAA TCACTAAGTT
    421 GCTAGCACAA GGACTAGTAA GTTATGAAGC AGAGAAATGG GCTAAGCATA GAAAAATTAT
    481 CAATCCTGCA TTTCACCTTG ACAAGTTGAA GCATATGCTA CCATCATTCT ACTTGAGTTG
    541 TTGTGACATG CTCAGAAAAT GGGAAAGTAT AGCTTCATCA GAGGGATCAG AAATAGACGT
    601 GTGGCCTTTT CTGGAAACGT TGACAAGCGA TGCTATTTCA AGAACAGCTT TTGGTAGTAA
    661 CTATGAAGAC GGGAGACAGA TATTTGAGCT TCAAAAAGAA CAAGCTGAGT TGATTTTACA
    721 AGCAGCGCGA TGGCTTTACA TCCCCGGATG GAGGTTTGTG CCAACAAAGA GGAACAAGAG
    781 GATGAAGCAA ATCGCTAAAG AAGTACGATC ATTAGTGTTG GGAATAATCA ATAAGAGAAT
    841 AAGGGAAATG AAAGCAGGGG AAGCTGCAAA AGATGACTTA CTGGGAATAC TATTGGAATC
    901 TAATTTCAAA GAAATCCAAA TGCACGGAAA CAAGAACTTT GGCATGACTA TCGACGAAGT
    961 GATTGAAGAG TGCAAGTTAT TTTACTTTGC TGGGCAAGAA ACTACTTCAG TTTTGCTTGT
   1021 TTGGACTTTG ATTTTACTGA GTAAGCATGT CGATTGGCAA GAAAGAGCTA GAGAAGAAGT
   1081 TCATCAAGTC TTTGGAAGTA ACAAACCTGA TTATGACGCA TTGAATCAGT TGAAAGTTGT
   1141 AACGATGATA TTCAACGAGG TTTTAAGGTT GTACCCACCG GGAATTACCA TAAGTCGAAC
   1201 TGTACACGAG GATACCAAAT TAGGGAACTT GTCATTGCCA GCAGGGATAC AGCTTGTGTT
   1261 ACCTGCAATT TGGTTGCATC ATGACAATGA AATATGGGGA GATGATGCAA AGGAGTTCAA
   1321 ACCAGAGAGG TTTAGTGAAG GAGTTAATAA AGCAACAAAG GGTAAATTTG CATATTTTCC
   1381 ATTTAGTTGG GGACCAAGAA TATGTGTTGG ACTGAATTTT GCAATGTTAG AGGCAAAAAT
   1441 GGCACTTGCA TTGATTCTAC AACACTATGC TTTTGAGCTC TCTCCATCTT ATGCACATGC
   1501 TCCTCATACA ATTATCACTC TGCAACCTCA ACATGGTGCT CCTTTGATTT TGCGCAAGCT
   1561 GTAGCGCGGA TATATTGATT GGTTATCTAC TGTAG

SEQ. ID. NO. 230
      1 METLFNIKVA VSLVIVIIFL RWVWKFLNWV WIQPKKMEKR LKMEGFKGSS YKLLFGDMKE
     61 INTMVEEAKT KPMNFTNDYV ARVLPHFTKL MLQYGKNSFM WLGPKPTMFI TDPELIREIL
    121 SKSYIYQEIQ GNPITKLLAQ GLVSYEAEKW AKHRKIINPA FHLDKLKHML PSFYLSCCDM
    181 LRKWESIASS EGSEIDVWPF LETLTSDAIS RTAFGSNYED GRQIFELQKE QAELILQAAR
    241 WLYIPGWRFV PTKRNKRMKQ IAKEVRSLVL GIINKRIREM KAGEAAKDDL LGILLESNFK
    301 EIQMHGNKNF GMTIDEVIEE CKLFYFAGQE TTSVLLVWTL ILLSKHVDWQ ERAREEVHQV
    361 FGSNKPDYDA LNQLKVVTMI FNEVLRLYPP GITISRTVHE DTKLGNLSLP AGIQLVLPAI
    421 WLHHDNEIWG DDAKEFKPER FSEGVNKATK GKFAYFPFSW GPRICVGLNF AMLEAKMALA
    481 LILQHYAFEL SPSYAHAPHT IITLQPQHGA PLILRKL
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NAME   D209-AH12
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 231
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       1 ATATGCAACT GAGATTTGAA GAATACCAAC TAACCAAAAT GCAGTTCTTC AGCTTGGTTT
      61 CCATTTTCCT ATTTCTATCT TTCCTCTTTT TGTTAAGGAT ATGGAAGAAC TCCAATAGCC
     121 AAAGCAAAAA GTTGCCACCA GGTCCATGGA AACTACCAAT ACTAGGAAGT ATGCTTCATA
     181 TGGTTGGTGG ACTACCACAC CATGTCCTTA GAGATTTAGC CAAAAAATAT GGACCACTTA
     241 TGCACCTTCA ATTAGGTGAA GTTTCTGCGG TTGTGGTTAC TTCTCCTGAT ACGGCAAAAG
     301 AAGTATTAAA AACTCATGAC ATCGCTTTTG CGTCTAGGCC TAGCCTTTTG GCCCCGGAGA
     361 TTGTCTGTTA CAATAGGTCT GATCTAGCCT TTTGCCCCTA TGGCGACTAT TGGAGACAAA
     421 TGCGTAAAAT ATGTGTCTTG GAAGTGCTCA GTGCCAAGAA TGTTCGGACA TTTAGCTCTA
     481 TTAGGCGGAA TGAAGTTCTT CGTCTCATTA ATTTTATCCG GTCATCTTCT GGTGAACCTA
     541 TTAATGTTAC GGAAAGGATC TTTTTGTTCA CAAGCTCCAT GACATGTAGA TCAGCGTTTG
     601 GGCAAGTGTT CAAAGAGCAA GACAAATTTA TACAACTAAT TAAAGAAGTG ATACTCTTAG
     661 CAGGAGGGTT TGATGTGGCT GACATATTCC CTTCACTGAA GTTTCTTCAT GTGCTCAGTG
     721 GAATGAAGGG TAAGATTATG AATGCACACC ATAAGGTAGA TGCCATTGTT GAGAATGTCA
     781 TCAATGAGCA CAAGAAAAAT CTTGCAATTG GGAAAACTAA TGGAGCGTTA GGAGGTGAAG
     841 ATTTAATTGA TGTTCTTCTA AGACTTATGA ATGATGGAGG CCTTCAATTT CCTATCACCA
     901 ACGACAACAT CAAAGCCATA ATTTTTGACA TGTTTGCTGC CGGGACAGAG ACTTCATCGT
     961 CAACAATTGT GTGGGCTATG GTAGAAATGG TGAAAAATCC AGCCGTATTC GCGAAAGCTC
    1021 AAGCAGAAGT AAGAGAAGCA TTTAGAGGAA AAGAAACTTT CGATGAAAAT GATGTGGAGG
    1081 AGCTAAACTA CCTAAAGTTA GTAATAAAAG AAACTCTAAG ACTTCATCCA CCGGTTCCAC
    1141 TTTTGCTCCC AAGAGAATGT AGGGAAGAGA CAAATATAAA CGGCTACACT ATTCCTGTAA
    1201 AGACCAAAGT CATGGTTAAT GTTTGGGCTT TGGGAAGAGA TCCAAAATAT TGGAATGACG
    1261 CAGAAACTTT TATGCCAGAG AGATTTGAGC AGTGCTCTAA GGATTTTGTT GGTAATAATT
    1321 TTGAATATCT TCCATTGGT GGCGGAAGGA GGATTTGTCC TGGGATTTCG TTTGGCTTAG
    1381 CTAATGCTTA TTTGCCATTG GCTCAATTAC TATATCACTT CGATTGGAAA CTCCCTGCTG
    1441 GAATCGAACC AAGCGACTTG GACTTGACTG AGTTGGTTGG AGTAACTGCC GCTAGAAAAA
    1501 GTGACCTTTA CTTGGTTGCG ACTCCTTATC AACCTCCTCA AAAGTGATTT AATGGTTTCA
    1561 AGTTTTTATT TCCTAGCAAA CCCCACTATT GTCCTATCTT TCTTTTGGTG TTTTCGGTTT
    1621 TATCTACTCT AATACATGCA TCTTTTACCA TATAGGAATG TACCATGTTG TCG
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SEQ. ID. NO. 232
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       1 MQLRFEEYQL TKMQFFSLVS IFLFLSFLFL LRIWKNSNSQ SKKLPPGPWK LPILGSMLHM
      61 VGGLPHHVLR DLAKKYGPLM HLQLGEVSAV VVTSPDTAKE VLKTHDIAFA SRPSLLAPEI
     121 VCYNRSDLAF CPYGDYWRQM RKICVLEVLS AKNVRTFSSI RRNEVLRLIN FIRSSSGEPI
     181 NVTERIFLFT SSMTCRSAFG QVFKEQDKFI QLIKEVILLA GGFDVADIFP SLKFLHVLSG
     241 MKGKIMNAHH KVDAIVENVI NEHKKNLAIG KTNGALGGED LIDVLLRLMN DGGLQFPITN
     301 DNIKAIIFDM FAAGTETSSS TIVWAMVEMV KNPAVFAKAQ AEVREAFRGK ETFDENDVEE
     361 LNYLKLVIKE TLRLHPPVPL LLPRECREET NINGYTIPVK TKVMVNVWAL GRDPKYWNDA
     421 ETFMPERFEQ CSKDFVGNNF EYLPFGGGRR ICPGISFGLA NAYLPLAQLL YHFDWKLPAG
     481 IEPSDLDLTE LVGVTAARKS DLYLVATPYQ PPQK
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NAME   D221-BB8
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 233
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   1 GAATTATTTC ACGTGTTGTA TTCCTTGTCT ATGATAGGAA GCTCGTTACC TCAGCGTACA
  61 AACCCCAAAT AAAAAATGAA TTTCCTTGTG GTGTTAGCTT CTCTCTTTCT CTTTGTGTTC
 121 CTAATGAGGA TAAGCAAAGC AAAAAAGCTC CCTCCAGGTC CAAGGAAACT GCCTATAATA
 181 GGAAACCTTC ATCAAATTGG AAAATTACCT CATCGTTCAC TTCAAAAACT TTCTAATGAA
 241 TATGGGGATT TCATTTTCTT GCAATTAGGT TCTGTACCGA CTGTGGTTGT CTCCTCAGCT
 301 GACATTGCCC GAGAGATCTT TAGAACTCAC GACCTTGTTT TCTCAGGCCG TCCTGCTTTA
 361 TATGCTGCCA GAAAACTTTC CTACAATTGC TACAACGTTT CATTTGCACC CTATGGTAAT
 421 TACTGGAGAG AGGCTCGGAA AATTCTAGTG TTGGAGTTGC TAAGTACAAA GAGAGTACAA
 481 AGTTTCGAGG CAATTCGAGA CGAGGAAGTA AGTAGCTTGG TTCAAATTAT CTGTAGTTCC
 541 TTGAGCTCAC CTGTTAACAT AAGCACATTA GCACTATCCT TGGCAAATAA CGTTGTTTGT
 601 CGAGTGGCTT TTGGGAAAGG GAGTGCTGAA GGAGCAAATG ATTATGAGGA TAGGAAGTTT
 661 AATGAAATTC TATATGAGAC ACAAGAATTA TTGGGTGAGT TTAACGTTGC TGATTATTTT
 721 CCTCGGATGG CATGGATTAA CAAAATAAAT GGGTTTGATG AACGATTGGA AAATAATTTT
 781 AGGGAATTGG ATAAGTTTTA TGACAAAGTA ATAGAAGATC ATCTTAATTC ATGTAGCTGG
 841 ATGAAACAAA GGGATGATGA AGACGTTATT GATGTATTGC TTCGAATTCA AAAGGATCCA
 901 AGCCAAGAAA TTCCTCTCAA AGATGATCAC ATTAAGGGCC TTCTTGCGGA TATATTCATA
 961 GCTGGAACTG ATACATCATC AACAACCATA GAATGGGCAA TGTCAGAACT CATAAAAAAT
1021 CCAAGAGTCT TGAGAAAAGC TCAAGAGGAA GTTAGAGAAG TTTCTAAGGG AAAACAAAAG
1081 GTCCAAGAAA GTGATCTTTG CAAACTAGAT TACTTGAAAT TGGTCATCAA AGAAACCTTT
1141 AGACTACACC CACCAGTCCC ATTACTAGTC CCTCGAGTAA CAACAGCCAG CTGCAAAATA
1201 ATGGAATACG AAATTCCAGT AAATACAAGA GTCTTCATCA ACGCGACAGC AAATGGGACA
1261 AATCCAAAAT ACTGGGAAAA TCCATTGACA TTCTTGCCAG AGAGATTCTT GGATAAGGAG
1321 ATTGATTACA GAGGCAAAAA TTTTGAGTTG TTGCCATTTG GGGCAGGGAG AAGAGGGTGT
1381 CCAGGAATTA ATTTTTCAAT ACCACTTGTT GAGCTTGCAC TTGCTAATCT ATTGTTTCAT
1441 TATAATTGGT CACTTCCTGA AGGGATGCTA GCTAAGGATG TTGATATGGA AGAAGCTTTG
1501 GGGATTACCA TGCACAAGAA ATCTCCCCTT TGCTTAGTAG CTTCTCATTA TACTTGTTGA
1561 GATTTTAAAA GATTTTAGCA TAGCTATATA TAGCTTGAAG T
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SEQ. ID. NO. 234
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   1 MNFLVVLASL FLFVFLMRIS KAKKLPPGPR KLPIIGNLHQ IGKLPHRSLQ KLSNEYGDFI
  61 FLQLGSVPTV VVSSADIARE IFRTHDLVFS GRPALYAARK LSYNCYNVSF APYGNYWREA
 121 RKILVLELLS TKRVQSFEAI RDEEVSSLVQ IICSSLSSPV NISTLALSLA NNVVCRVAFG
 181 KGSAEGGNDY EDRKFNEILY ETQELLGEFN VADYFPRMAW INKINGFDER LENNFRELDK
 241 FYDKVIEDHL NSCSWMKQRD DEDVIDVLLR IQKDPSQEIP LKDDHIKGLL ADIFIAGTDT
 301 SSTTIEWAMS ELIKNPRVLR KAQEEVREVS KGKQKVQESD LCKLDYLKLV IKETFRLHPP
 361 VPLLVPRVTT ASCKIMEYEI PVNTRVFINA TANGTNPKYW ENPLTFLPER FLDKEIDYRG
 421 KNFELLPFGA GRRGCPGINF SIPLVELALA NLLFHYNWSL PEGMLAKDVD MEEALGITMH
 481 KKSPLCLVAS HYTC
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NAME   D222-BH4
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 235
        1 CAAAGACTAA AAGATGTCGG TCTTTGCGGT TATTTCATTC TTTCTACTTC TGTTTTTTCT
       61 TTTCAAATCA TATTTGCCCT CATCGAAAAC AAAGAAAAAT TCTCCACCAT CTCCTTCAAA
      121 GCTTCCGTTA ATCGGTCACT TCCACAAACT AGGCTTACAA CCTCACCGTT CTCTACAAAA
      181 ACTATCAAAT GAACATGGTC CCATGATGAT GCTTCAATTC GGTAGCGTAC CTGTGCTTAT
      241 CGCTTCATCA GCTGAAGCTG CTTCCGAAAT CATGAAAACC CAAGATTTGT CTTTTGCAAA
      301 CAAACCCATT TCAACCATTC CTAGCAAGCT TTTCTTCGGC CCAAAGGACG TTGCCTTCAC
      361 CCCATATGGG GATTACTGGA GGAATGCCAG AAGCATTTGC ATGCTTCAGC TTTTGAACAA
      421 CAAAAGAGTC CAGTCTTTTC GAAAGATAAG GGAAGAAGAG ACTTCTCTTC TTCTCCAGAG
      481 GATTAGGGAA TCGCCAAATT CAGAAGTCGA TTTAACGGAG CTGTTCGTTT CCATGACTAA
      541 CGACATAGTT TGCAGGGTGG CCTTAGGAAG GAAGTATTGT GATGGGGAAG AAGGGAGGAA
      601 ATTCAAGTCT TTGCTGTTAG AGTTTGTGGA ATTGTTGGGA GTTTTTAACA TTGGAGATTA
      661 CATGCCGTGG CTTGCATGGA TGAATCGTTT CAATGGTTTG AATGCCAAAG TGGATAAAGT
      721 GGCGAAAGAG TTTGATGCAT TTTTGGAGGA TGTGATTGAG GAACACGGAG GAAATAAGAA
      781 ATCAGACACT GAAGCTGAAG GGGCAGACTT CGTGGATATA TTATTGCAGG TTCACAAAGA
      841 AAACAAGGCT GGTTTTCAAG TCGAAATGGA TGCAATCAAA GCTATTATCA TGGATATGTT
      901 TGCTGCGGGA ACAGATACAA CTTCCACGCT TCTAGAGTGG ACAATGAACG AGCTCTTAAG
      961 AAATCCAAAA ACATTGAATA AGTTGAGAGA TGAGGTGAGA CAAGTGACTC AAGGGAAGAC
     1021 AGAGGTAACA GAGGATGACT TAGAGAAAAT GCCGTATTTA AGAGCAGCAG TTAAGGAGAG
     1081 TTCCAGGCTA CACTCTCCAG TGCCACTTCT ACCTCGAGAA GCAATTAAGG ATGCAAAGGT
     1141 TTTGGGCTAC GATATAGCTG CAGGGACTCA AGTCCTCGTT TGTCCATGGG CAATCTCAAG
     1201 AGATCCAAAC CTTTGGGAAA ATCCAGAGGA GTTTCAACCT GAAAGATTCT TGGATACTTC
     1261 CATAGATTAC AAAGGCTTAC ATTTCGAGTT AATTCCATTC GGTGCAGGTC GGAGGGGTTG
     1321 CCCTGGCATC ACATTTGCTA AGTTTGTGAA TGAGCTAGCA TTGGCAAGAT TAATGTTCCA
     1381 TTTTGATTTC TCGCTACCAA AAGGAGTTAA GCATGAGGAT TTGGACGTGG AGGAAGCTGC
     1441 TGGAATTACT GTTAGAAGGA AGTTCCCCCT TTTAGCCGTC GCCACTCCAT GCTCGTGATT
     1501 TTTATTTTAG AGCTCATTCT ATGCCTTAAA AACTACTACT AGATAACTGC GTAGTAAATA
     1561 ATGCTTGGTA

SEQ. ID. NO. 236
        1 MSVFAVISFF LLLFFLFKSY LPSSKTKKNS PPSPSKLPLI GHFHKLGLQP HRSLQKLSNE
       61 HGPMMMLQFG SVPVLIASSA EAASEIMKTQ DLSFANKPIS TIPSKLFFGP KDVAFTPYGD
      121 YWRNARSICM LQLLNNKRVQ SFRKIREEET SLLLQRIRES PNSEVDLTEL FVSMTNDIVC
      181 RVALGRKYCD GEEGRKFKSL LLEFVELLGV FNIGDYMPWL AWMNRFNGLN AKVDKVAKEF
      241 DAFLEDVIEE HGGNKKSDTE AEGADFVDIL LQVHKENKAG FQVEMDAIKA IIMDMFAAGT
      301 DTTSTLLEWT MNELLRNPKT LNKLRDEVRQ VTQGKTEVTE DDLEKMPYLR AAVKESSRLH
      361 SPVPLLPREA IKDAKVLGYD IAAGTQVLVC PWAISRDPNL WENPEEFQPE RFLDTSIDYK
      421 GLHFELIPFG AGRRGCPGIT FAKFVNELAL ARLMFHFDFS LPKGVKHEDL DVEEAAGITV
      481 RRKFPLLAVA TPCS

NAME   D224-AF10
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 237
        1 ATTATCCATC ACCTAAAATG GAGAATTCTT GGGTTTTTCT AGCCTTGGCA GGGCTATCTG
       61 CATTAGCTTT TCTCTGTAAA ATAATCACCT GTCGAAGACC GGTTAACCGG AAAATACCAC
      121 CAGGTCCAAA ACCATGGCCC ATCATTGGCA ATTTGAACCT ACTTGGTCCT ATACCACATC
      181 AATCTTTTGA CTTGCTTTCC AAAAAATATG GAGAGTTGAT GCTGCTGAAA TTTGGCTCCA
      241 GGCCAGTTCT TGTTGCTTCA TCTGCTGAAA TGGCAAAACA GTTTTTAAAA GTACATGATG
      301 CTAATTTCGC CTCCCGTCCT ATGCTAGCTG GTGGAAAGTA TACAAGCTAT AACTATTGTG
      361 ACATGACATG GGCACCCTAT GGTCCCTATT GGCGCCAAGC ACGACGAATT TACCTTAACC
      421 AGATATTTAC TCCGAAAAGG CTAGACTCGT TCGAGTACAT TCGTGTTGAA GAAAGGCAGG
      481 CCTTGATTTC CCAGCTGAAT TCCCTTGCTG GAAAGCCATT TTTTCTCAAA GACCATTTGT
      541 CGCGATTTAG CCTCTGCAGC ATGACAAGGA TGGTTTTGAG CAACAAGTAC TTTGGTGAAT
      601 CAACAGTTAG AGTAGAAGAT TTGCAGTACC TGGTAGATCA ATGGTTCTTA CTTAATGGTG
      661 CTTTCAACAT TGGAGATTGG ATTCCATGGC TCAGCTTCTT GGACCTACAA GGCTATGTGA
      721 AACAAATGAA GGCTTTGAAA AGAACTTTTG ATAAGTTCCA CAACATTGTG CTAGATGATC
      781 GCAGGGCTAA GAAGAATGCA GAGAAGAACT TTGTCCCAAA AGACATGGTT GATGTCTTGT
      841 TGAAGATGGC TGAAGATCCT AATCTGGAAG TCAAACTCAC TAATGACTGT GTCAAAGGGT
      901 TAATGCAGGA TTTACTAACT GGAGGAACAG ATAGCTTAAC AGCAGCAGTG CAATGGGCAT
      961 TTCAAGAACT TCTTAGACGG CCAAGGGTTA TTGAGAAGGC AACCGAAGAG CTTGACCGGA
     1021 TTGTCGGGAA AGAGAGATGG GTAGAAGAGA AGATTGCTC GCAGCTATCT TACGTTGAAG
     1081 CAATCCTCAA GGAAACACTA AGGTTACATC CTCTAGGAAC TATGCTAGCA CCGCATTGTG
     1141 CTATAGAAGA TTGTAACGTG GCTGGTTATG ACATACAGAA AGGAACGACC GTTCTGGTGA
     1201 ATGTTTGGAC CATTGGAAGG GACCCAAAAT ACTGGGATAG AGCACAAGAG TTTCTCCCCG
     1261 AGAGATTCTT AGAGAACGAC ATTGATATGG ACGGACATAA CTTTGCTTTC TTGCCATTTG
     1321 GCTCGGGGCG AAGGAGGTGC CCTGGCTATA GCCTTGGACT TAAGGTTATC CGAGTAACAT
     1381 TAGCCAACAT GTTGCATGGA TTCAACTGGA AATTACCTGA AGGTATGAAG CCAGAAGATA
     1441 TAAGTGTGGA AGAACATTAT GGGCTCACTA CACATCCTAA GTTTCCTGTT CCTGTGATCT
     1501 TGGAATCTAG ACTTTCTTCA GATCTCTATT CCCCCATCAC TTAATCCTAA GTGCTTCCTA
     1561 TTATAGCATC ATATCAATAT CCCTC

SEQ. ID. NO. 238
        1 MENSWVFLAL AGLSALAFLC KIITCRRPVN RKIPPGPKPW PIIGNLNLLG PIPHQSFDLL
       61 SKKYGELMLL KFGSRPVLVA SSAEMAKQFL KVHDANFASR PMLAGGKYTS YNYCDMTWAP
      121 YGPYWRQARR IYLNQIFTPK RLDSFEYIRV EERQALISQL NSLAGKPFFL KDHLSRFSLC
      181 SMTRMVLSNK YFGESTVRVE DLQYLVDQWF LLNGAFNIGD WIPWLSFLDL QGYVKQMKAL
      241 KRTFDKFHNI VLDDRRAKKN AEKNFVPKDM VDVLLKMAED PNLEVKLTND CVKGLMQDLL
      301 TGGTDSLTAA VQWAFQELLR RPRVIEKATE ELDRIVGKER WVEEKDCSQL SYVEAILKET
      361 LRLHPLGTML APHCAIEDCN VAGYDIQKGT TVLVNVWTIG RDPKYWDRAQ EFLPERFLEN
      421 DIDMDGHNFA FLPFGSGRRR CPGYSLGLKV IRVTLANMLH GFNWKLPEGM KPEDISVEEH
      481 YGLTTHPKFP VPVILESRLS SDLYSPIT

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NAME        D224-BD11
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 239
       1 CTCATTATCC ATCACCTAAA ATGGAGAATT CTTGGGTTTT TCTAGCCTTG GCAGGGCTAT
      61 CTGCATTAGC TTTTCTCTGT AAAATAATCA CCTGTCGAAG ACCGGTTAAC CGGAAAAATAC
     121 CACCAGGTCC AAAACCATGG CCCATCATTG GCAATTTGAA CCTACTTGGT CCTATACCAC
     181 ATCAATCTTT TGACTTGCTT TCCAAAAAAT ATGGAGAGTT GATGCTGCTG AAATTTGGCT
     241 CCAGGCCAGT TCTTGTTGCT TCATCTGCTG AAATGGCAAA ACAGTTTTTA AAAGTACATG
     301 ATGCTAATTT CGCCTCCCGT CCTATGCTAG CTGGTGGAAA GTATACAAGC TATAACTATT
     361 GTGACATGAC ATGGGCACCC TATGGTCCCT ATTGGCGCCA AGCACGACGA CGAATTTACC
     421 TTAACCAGAT ATTTACTCCG AAAAGGCTAG ACTCGTTCGA GTACATTCGT GTTGAAGAAA
     481 GGCAGGCCTT GATTTCCCAG CTGAATTCCC TTGCTGGAAA GCCATTTTTT CTCAAAGACC
     541 ATTTGTCGCG ATTTAGCCTC TGCAGCATGA CAAGGATGGT TTTGAGCAAC AAGTATTTTG
     601 GTGAATCAAC AGTTAGAGTA GAAGATTTGC AGTACCTGGT AGATCAATGG TTCTTACTTA
     661 ATGGTGCTTT CAACATTGGA GATTGGATTC CATGGCTCAG CTTCTTGGAC CTACAAGGCT
     721 ATGTGAAACA AATGAAGGCT TTGAAAAGAA CTTTTGATAA GTTCCACAAC ATTGTGCTAG
     781 ATGATCACAG GGCTAAGAAG AATGCAGAGA AGAACTTTGT CCCAAAAGAC ATGGTTGATG
     841 TCTTGTTGAA GATGGCTGAA GATCCTAATC TGGAAGTCAA ACTCACTAAT GACTGTGTCA
     901 AAGGGTTAAT GCAGGATTTA CTAACTGGAG GAACAGATAG CTTAACAGCA GCAGTGCAAT
     961 GGGCATTTCA AGAACTTCTT AGACAGCCAA GGGTTATTGA GAAGGCAACC GAAGAGCTTG
    1021 ACCGGATTGT CGGGAAAGAG AGATGGGTAG AAGAGAAAGA TTGCTCGCAG CTATCTTACG
    1081 TTGAAGCAAT CCTCAAGGAA ACACTAAGGT TACATCCTCT AGGAACTATG CTAGCACCGC
    1141 ATTGTGCTAT AGAAGATTGT AACGTGGCTG GTTATGACAT ACAGAAAGGA ACGACCGTTC
    1201 TGGTGAATGT TTGGACCATT GGAAGGGACC CAAAATACTG GGATAGAGCA CAAGAGTTTC
    1261 TCCCCGAGAG ATTCTTAGAG AACGACATTG ATATGGACGG ACATAACTTT GCTTTCTTGC
    1321 CATTTGGCTC GGGGCGAAGG AGGTGCCCTG GCTATAGCCT TGGACTTAAG GTTATCCGAG
    1381 TAACATTAGC CAACATGTTG CATGGATTCA ACTGGAAATT ACCTGAAGGT ATGAAGCCAG
    1441 AAGATATAAG TGTGGAAGAA CATTATGGGC TCACTACACA TCCTAAGTTT CCTGTTCCTG
    1501 TGATCTTGGA ATCTAGACTT TCTTCAGATC TCTATTCCCC CATCACTTAA TCCTAAGTGC
    1561 TTCCTATTAT AGCATCATAT CAATATCCCT C

SEQ. ID. NO. 240
       1 MENSWVFLAL AGLSALAFLC KIITCRRPVN RKIPPGPKPW PIIGNLNLLG PIPHQSFDLL
      61 SKKYGELMLL KFGSRPVLVA SSAEMAKQFL KVHDANFASR PMLAGGKYTS YNYCDMTWAP
     121 YGPYWRQARR RIYLNQIFTP KRLDSFEYIR VEERQALISQ LNSLAGKPFF LKDHLSRFSL
     181 CSMTRMVLSN KYFGESTVRV EDLQYLVDQW FLLNGAFNIG DWIPWLSFLD LQGYVKQMKA
     241 LKRTFDKFHN IVLDDHRAKK NAEKNFVPKD MVDVLLKMAE DPNLEVKLTN DCVKGLMQDL
     301 LTGGTDSLTA AVQWAFQELL RQPRVIEKAT EELDRIVGKE RWVEEKDCSQ LSYVEAILKE
     361 TLRLHPLGTM LAPHCAIEDC NVAGYDIQKG TTVLVNVWTI GRDPKYWDRA QEFLPERFLE
     421 NDIDMDGHNF AFLPFGSGRR RCPGYSLGLK VIRVTLANML HGFNWKLPEG MKPEDISVEE
     481 HYGLTTHPKF PVPVILESRL SSDLYSPIT
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NAME   D228-AD7
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 241
       1 TGATAATGCT CTTTCTACTC TTTGTAGCCC TTCCTTTCAT TCTTATTTTT CTTCTTCCTA
      61 AATTCAAAAA TGGTGGAAAT AACAGATTGC CACCAGGTCC TATAGGTTTA CCATTCATTG
     121 GAAATTTGCA TCAATACGAT AGTATAACTC CTCATATCTA TTTTTGGAAA CTTTCAAAAA
     181 AATATGGCAA AATCTTCTCA TTAAAACTTG CTTCTACTAA TGTGGTAGTA GTTTCTTCAG
     241 CAAAATTAGC AAAAGAAGTA TTGAAAAAAC AAGATTTAAT ATTTTGTAGT AGACCATCTA
     301 TTCTTGGCCA ACAAAAACTG TCTTATTATG GTCGTGATAT TGCTTTTAAT GATTATTGGA
     361 GAGAAATGAG AAAAATTTGT GTTCTTCATC TTTTTAGTTT AAAAAAAGTT CAATTATTTA
     421 GTCCAATTCG TGAAGATGAA GTTTTTAGAA TGATTAAGAA AATATCAAAA CAAGCTTCTA
     481 CTTCACAAAT TATTAATTTG AGTAATTTAA TGATTTCATT AACAAGTACA ATTATTTGTA
     541 GAGTTGCTTT TGGTGTTAGG ATTGAAGAAG AAGCACATGC AAGGAAGAGA TTTGATTTTC
     601 TTTTGGCCGA GGCACAAGAA ATGATGGCTA GTTTCTTTGT ATCTGATTTT TTTCCCTTTT
     661 TAAGTTGGAT TGATAAATTA AGTGGATTGA CATATAGACT TGAGAGGAAT TTCAAGGATT
     721 TGGATAATTT TTATGAAGAA CTCATTGAGC AACATCAAAA TCCTAATAAG CCAAAATATA
     781 TGGAAGGAGA TATTGTTGAT CTTTTGCTAC AATTGAAGAA AGAGAAATTA ACACCACTTG
     841 ATCTCACTAT GGAAGATATA AAAGGAATTC TCATGAATGT GTTAGTTGCA GGATCAGACA
     901 CTAGTGCAGC TGCTACTGTT TGGGCAATGA CAGCCTTGAT AAAGAATCCT AAAGCCATGG
     961 AAAAAGTTCA ATTAGAAATC AGAAAATCAG TTGGGAAGAA AGGCATTGTA AATGAAGAAG
    1021 ATGTCCAAAA CATCCCTTAT TTTAAAGCAG TGATAAAGGA AATATTTAGA TTGTATCCAC
    1081 CAGCTCCACT TTTAGTTCCA AGAGAATCAA TGGAAAAAAC CATATTAGAA GGTTATGAAA
    1141 TTCGGCCAAG AACCATAGTT CATGTTAACG CTTGGGCTAT AGCAAGGGAT CCTGAAATAT
    1201 GGGAAAATCC AGATGAATTT ATACCTGAGA GATTTTTGAA TAGCAGTATC GATTACAAGG
    1261 GTCAAGATTT TGAGTTACTT CCATTTGGTG CAGGCAGAAG AGGTTGCCCA GGTATTGCAC
    1321 TTGGGGTTGC ATCCATGGAA CTTGCTTTGT CAAATCTTCT TTATGCATTT GATTGGGAGT
    1381 TGCCTTATGG AGTAAAAAAA GAAGACATCG ACACAAACGT TAGGCCTGGA ATTGCCATGC
    1441 ACAAGAAAAA CGAACTTTGC CTTGTCCCAA AAAATTATTT ATAAATTATA TTGGGACGTG
    1501 GATCTCATGC TAGTTCTGTG CGGTCAGCTA AGCTTATTAT TTTTGGCTCA AATTATGTAT
    1561 ACATAATTAG TACATGTTTA AAATGTATAA ATATAGTAGA ACCATTCTCA TGGTT

SEQ. ID. NO. 242
       1 MLFLLFVALP FILIFLLPKF KNGGNNRLPP GPIGLPFIGN LHQYDSITPH IYFWKLSKKY
      61 GKIFSLKLAS TNVVVVSSAK LAKEVLKKQD LIFCSRPSIL GQQKLSYYGR DIAFNDYWRE
     121 MRKICVLHLF SLKKVQLFSP IREDEVFRMI KKISKQASTS QIINLSNLMI SLTSTIICRV
     181 AFGVRIEEEA HARKRFDFLL AEAQEMMASF FVSDFPPFLS WIDKLSGLTY RLERNFKDLD
     241 NFYEELIEQH QNPNKPKYME GDIVDLLLQL KKEKLTPLDL TMEDIKGILM NVLVAGSDTS
     301 AAATVWAMTA LIKNPKAMEK VQLEIRKSVG KKGIVNEEDV QNIPYFKAVI KEIFRLYPPA
     361 PLLVPRESME KTILEGYEIR PRTIVHVNAW AIARDPEIWE NPDEFIPERF LNSSIDYKGQ
     421 DFELLPFGAG RRGCPGIALG VASMELALSN LLYAFDWELP YGVKKEDIDT NVRPGIAMHK
     481 KNELCLVPKN YL

NAME   D228-AH8
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 243

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   1 TGATAATGCT CTTTCTACTC TTTGTAGCCC TTCCTTTCAT TCTTATTTTT CTTCTTCCTA
  61 AATTCAAAAA TGGTGGAAAT AACAGATTGC CACCAGGTCC TATAGGTTTA CCATTCATTG
 121 GAAATTTGCA TCAATATGAT AGTATAACTC CTCATATCTA TTTTTGGAAA CTTTCCAAAA
 181 AATATGGCAA AATCTTCTCA TTAAAACTTG CTTCTACTAA TGTGGTAGTA GTTTCTTCAG
 241 CAAAATTAGC AAAAGAAGTA TTGAAAAAAC AAGATTTAAT ATTTTGTAGT AGACCATCTA
 301 TTCTTGGCCA ACAAAAACTG TCTTATTATG GTCGTGATAT TGCTTTTGCA CCTTATAATG
 361 ATTATTGGAG AGAAATGAGA AAAATTTGTG TTCTTCATCT TTTTAGTTTA AAAAAAGTTC
 421 AATTATTTAG TCCAATTCGT GAAGATGAAG TTTTTAGAAT GATTAAGAAA ATATCAAAAC
 481 AAGCTTCTAC TTCACAAATT ATTAATTTGA GTAATTTAAT GATTTCATTA ACAAGTACAA
 541 TTATTTGTAG AGTTGCTTTT GGTGTTAGGT TTGAAGAAGA AGCACATGCA AGGAAGAGAT
 601 TTGATTTTCT TTTGGCCGAG GCACAAGAAA TGATGGCTAG TTTCTTTGTA TCTGATTTTT
 661 TTCCCTTTTT AAGTTGGATT GATAAATTAA GTGGATTGAC ATATAGACTT GAGAGGAATT
 721 TCAAGGATTT GGATAATTTT TATGAAGAAC TCATTGAGCA ACATCAAAAT CCTAATAAGC
 781 CAAAATATAT GGAAGGAGAT ATTGTTGATC TTTTGCTACA ATTGAAGAAA GAGAAATTAA
 841 CACCACTTGA TCTCACTATG GAAGATATAA AAGGAATTCT CATGAATGTG TTAGTTGCAG
 901 GATCAGACAC TAGTGCAGCT GCTACTGTTT GGGCAATGAC AGCCTTGATA AAGAATCCTA
 961 AAGCCATGGA AAAAGTTCAA TTAGAAATCA GAAAATCAGT TGGGAAGAAA GGCATTGTAA
1021 ATGAAGAAGA TGTCCAAAAC ATCCCTTATT TTAAAGCAGT GATAAAGGAA ATATTTAGAT
1081 TGTATCCACC AGCTCCACTT TTAGTTCCAA GAGAATCAAT GGAAAAAACC ATATTAGAAG
1141 GTTATGAAAT TCGGCCAAGA ACCATAGTTC ATGTTAACGC TTGGGCTATA GCAAGGGATC
1201 CTGAAATATG GGAAAATCCA GATGAATTTA TACCTGAGAG ATTTTTGAAT AGCAGTATCG
1261 ATTACAAGGG TCAAGATTTT GAGTTACTTC CATTTGGTGC AGGCAGAAGA GGTTGCCCAG
1321 GTATTGCACT TGGGGTTGCA TCCATGGAAC TTGCTTTGTC AAATCTTCTT TATGCATTTG
1381 ATTGGGAGTT GCCTTATGGA GTGAAAAAAG AAGACATCGA CACAAACGTT AGGCCTGGAA
1441 TTGCCATGCA CAAGAAAAAC GAACTTTGCC TTGTCCCAAA AAATTATTTA TAAATTATAT
1501 TGGGACGTGG ATCTCATGCT AGTTCTGTGC GGTCAGCTAA GCTTATTATT TTTGGCTCAA
1561 ATTATGTATA CATAATTAGT ACATGTTTAA AATGTATAAA TATAGTAGAA CCATTCTCAT
1621 GGTT
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SEQ. ID. NO. 244

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   1 MLFLLFVALP FILIFLLPKF KNGGNNRLPP GPIGLPFIGN LHQYDSITPH IYFWKLSKKY
  61 GKIFSLKLAS TNVVVVSSAK LAKEVLKKQD LIFCSRPSIL GQQKLSYYGR DIAFAPYNDY
 121 WREMRKICVL HLFSLKKVQL FSPIREDEVF RMIKKISKQA STSQIINLSN LMISLTSTII
 181 CRVAFGVRFE EEAHARKRFD FLLAEAQEMM ASFFVSDFFP FLSWIDKLSG LTYRLERNFK
 241 DLDNFYEELI EQHQNPNKPK YMEGDIVDLL LQLKKEKLTP LDLTMEDIKG ILMNVLVAGS
 301 DTSAAATVWA MTALIKNPKA MEKVQLEIRK SVGKKGIVNE EDVQNIPYFK AVIKEIFRLY
 361 PPAPLLVPRE SMEKTILEGY EIRPRTIVHV NAWAIARDPE IWENPDEFIP ERFLNSSIDY
 421 KGQDFELLPF GAGRRGCPGI ALGVASMELA LSNLLYAFDW ELPYGVKKED IDTNVRPGIA
 481 MHKKNELCLV PKNYL
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NAME        D235-AB1
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 245
      1 AAAATTCATA ATGGTTTTTC CCATAGAAGC CTTTGTAGGA CTAGTAACCT TCACATTTCT
     61 CTTATACTTC CTATGGACAA AAAAATCTCA AAAACTTCCA AAACCCTTAC TACCGAAAAT
    121 CCCCGGAGGA TGGCCGGTAA TCGGCCATCT TTTTCACTTC AATAACGACG GCGACGACCG
    181 TCCATTAGCT CGAAAACTCG GAGACTTAGC TGATAAATAC GGCCCCGTTT TCACTTTTCG
    241 GCTAGGTCTT CCCCTTGTGC TAGTTGTAAG CAGTTACGAA GCTATAAAAG ATTGCTTCTC
    301 TACAAATGAC GCCATTTTCT CCAATCGTCC AGCTTTTCTT TACGGCGAAT ACCTTGGCTA
    361 CAATAATACA ATGCTTTTTC TAGCAAATTA CGGACCTTAC TGGCGAAAAA ATCGTAAATT
    421 AGTCATTCAG GAAGTTCTCT CTGCTAGTCG TCTCGAAAAA TTCAAACAAG TGAGATTCAC
    481 CAGAATTCAA ACGAGCATTA GAATTTATA CACTCGAATT AATGGAAATT CGAGTACGAT
    541 AAATCTAACT GATTGGTTAG AAGAATTGGA TTTTGGTCTG ATCGTGAAAA TGATCGCTGG
    601 GAAAAATTAT GAATCCGGTA AAGGAGATGA ACAAGTGGAA AGATTTAAGA ATGCGTTTAA
    661 GGATTTTATG GTTTTATCAA TGGAATTTGT ATTATGGGAT GCATTCCAA TTCCATTATT
    721 TAAATGGGTG GATTTTCAAG GTCATATTAA GGCAATGAAA AGGACATTTA AGGATATAGA
    781 TTCTGTTTTT CAGAACTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTGG
    841 TGCAGAAGGG AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAATTGA GTAAAGAATA
    901 TCTTGATGAA GGTTACTCTC GTGATACTGT CATTAAAGCA ACAGTTTTTA GTTTGGTCTT
    961 GGATGCAGCA GACACAGTTG CTCTTCACAT AAATTGGGGA ATGACATTAT TGATAAACAA
   1021 TCAAAATGCC TTGATGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGTATAGATG
   1081 GGTAGAAGAG AGTGATATTA AGGATTTAGT ATACCTCCAA GCTATTGTTA AAAAGGTGTT
   1141 ACGATTATAT CCACCAGGAC CTTTGTTAGT ACCACATGAA TATGTAAAGG ATTGTGTTGT
   1201 TAGTGGATAT CACATTCCTA AAGGGACTAG ATTATTCGCA AACGTCATGA AACTGCAGCG
   1261 CGATCCTAAA CTCTTGTCAA ATCCTGATAA GTTCGATCCA GAGAGATTCA TCGCTGGTGA
   1321 TATCGACTTC CGTGGTCACC ACTATGAGTT TATCCCATTT GGTTCTGGAA GACGATCTTG
   1381 TCCGGGGATG ACTTATGCAT TGCAAGTGGA ACACCTAACA ATGGCACATT TAATCCAGGG
   1441 TTTCAATTAC AAAACTCCAA ATGACGAGGC CTTGGATATG AAGGAAGGTG CAGGCATAAC
   1501 AATACGTAAG GTAAATCCGG TGGAATTGAT AATAACGCCT CGCTTGGCAC CTGAGCTTTA
   1561 CTAAAACCTA AGATCTTTCA TCTTGGTTGA TCATTGTTTA ATACTCCTAG ATAGATGGGT
   1621 ATTCATC

SEQ. ID. NO. 246
      1 MVFPIEAFVG LVTFTFLLYF LWTKKSQKLP KPLLPKIPGG WPVIGHLFHF NNDGDDRPLA
     61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AIKDCFSTND AIFSNRPAFL YGEYLGYNNT
    121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKQVRFTRIQ TSIKNLYTRI NGNSSTINLT
    181 DWLEELDFGL IVKMIAGKNY ESGKGDEQVE RFKNAFKDFM VLSMEFVLWD AFPIPLFKWV
    241 DFQGHIKAMK RTFKDIDSVF QNWLEEHINK REKMEVGAEG NEQDFIDVVL SKLSKEYLDE
    301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MTLLINNQNA LMKAQEEIDT KVGKYRWVEE
    361 SDIKDLVYLQ AIVKKVLRLY PPGPLLVPHE YVKDCVVSGY HIPKGTRLFA NVMKLQRDPK
    421 LLSNPDKFDP ERFIAGDIDF RGHHYEFIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
    481 KTPNDEALDM KEGAGITIRK VNPVELIITP RLAPELY
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NAME          D243-AA2
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 247
      1 CAAAAAATCA TTTCTCTCGT CTAAAATGGA TCTTCTCTTA CTAGAGAAGA CCTTAATTGG
     61 TCTTTTCTTT GCCATTTTAA TCGCTTTAAT TGTCTCTAAA CTTCGTTCAA AGCGTTTTAA
    121 GCTTCCTCCA GGACCAATTC CAGTACCAGT TTTTGGTAAT TGGCTTCAAG TTGGTGATGA
    181 TTTAAACCAC AGAAATCTTA CTGATTATGC CAAAAAATTT GGCGATCTTT TCTTGTTAAG
    241 AATGGGTCAA CGTAACTTAG TTGTTGTGTC ATCTCCTGAA TTAGCTAAAG AAGTTTTACA
    301 CACACAAGGT GTTGAATTTG GTTCAAGAAC AAGAAATGTT GTGTTTGATA TTTTTACTGG
    361 AAAAGGTCAA GATATGGTTT TTACTGTATA TGGTGAACAT TGGAGAAAAA TGAGGAGAAT
    421 TATGACTGTA CCATTTTTTA CTAATAAAGT TGTGCAACAG TATAGAGGGG GGTGGGAGTT
    481 TGAGGTGGCA AGTGTAATTG AGGATGTGAA AAAAAATCCT GAATCTGCTA CTAATGGGAT
    541 CGTATTAAGG AGGAGATTAC AATTAATGAT GTATAATAAT ATGTTTAGGA TTATGTTTGA
    601 TAGGAGATTT GAGAGTGAAG ATGATCCTTT GTTTGTTAAG CTTAAGGCTT TGAATGGTAA
    661 AAGGAGTAGA TTGGCTCAAA GTTTTGAGTA TAATTATGGT GATTTTATTC CAATTTTGAG
    721 GCCTCTTTTG AGAGGTTATT TGAAGATCTG TAAAGAAGTT AAGGAGAAGA GGCTGCAGCT
    781 TTTCAAAGAT TACTTTGTTG ATGAAAGAAA GAAGCTTTCA AATACCAAGA GCTCGGACAG
    841 CAATGCCCTA AAATGTGCGA TTGATCACAT TCTTGAGGCT CAACAGAAGG GAGAGATCAA
    901 TGAGGACAAC GTTCTTTACA TTGTTGAAAA CATCAATGTT GCTGCAATTG AAACAACATT
    961 ATGGTCAATT GAGTGGGGTA TCGCCGAGCT AGTCAACCAC CCTCACATCC AAAAGAAACT
   1021 GCGCGACGAG ATTGACACAG TTCTTGGACC AGGAGTGCAA GTGACTGAAC CAGACACCCA
   1081 CAAGCTTCCA TACCTTCAGG CTGTGATCAA GGAGGCACTT CGTCTCCGTA TGGCAATTCC
   1141 TCTATTAGTC CCACACATGA ACCTTCACGA CGCAAAGCTT GGCGGGCTTG ATATTCCAGC
   1201 AGAGAGCAAA ATCTTGGTTA ACGCTTGGTG GTTAGCTAAC AACCCGGCTC ATTGGAAGAA
   1261 ACCCGAAGAG TTCAGACCCG AGAGGTTCTT TGAAGAGGAG AAGCATGTTG AGGCCAATGG
   1321 CAATGACTTC AGATATCTTC CGTTTGGCGT TGGTAGGAGG AGCTGCCCTG GAATTATACT
   1381 TGCATTGCCA ATTCTTGGCA TCACTTTGGG ACGTTTGGTT CAGAACTTTG AGCTGTTGCC
   1441 TCCTCCAGGC CAGTCGAAGC TCGACACCAC AGAGAAAGGT GGACAGTTCA GTCTCCACAT
   1501 TTTGAAGCAT CCCACCATTG TGTTGAAACC AAGGTCTTTC TGAACTTTGT GATCTTATTA
   1561 ATTAAGGGGT TCTGAAGAAA TTTGATAGTG TTGG

SEQ. ID. NO. 248
      1 MDLLLLEKTL IGLFFAILIA LIVSKLRSKR FKLPPGPIPV PVFGNWLQVG DDLNHRNLTD
     61 YAKKFGDLFL LRMGQRNLVV VSSPELAKEV LHTQGVEFGS RTRNVVFDIF TGKGQDMVFT
    121 VYGEHWRKMR RIMTVPFFTN KVVQQYRGGW EFEVASVIED VKKNPESATN GIVLRRRLQL
    181 MMYNNMFRIM FDRRFESEDD PLFVKLKALN GERSRLAQSF EYNYGDFIPI LRPLLRGYLK
    241 ICKEVKEKRL QLFKDYFVDE RKKLSNTKSS DSNALKCAID HILEAQQKGE INEDNVLYIV
    301 ENINVAAIET TLWSIEWGIA ELVNHPHIQK KLRDEIDTVL GPGVQVTEPD THKLPYLQAV
    361 IKEALRLRMA IPLLVPHMNL HDAKLGGLDI PAESKILVNA WWLANNPAHW KKPEEFRPER
    421 FFEEEKHVEA NGNDFRYLPF GVGRRSCPGI ILALPILGIT LGRLVQNFEL LPPPGQSKLD
    481 TTEKGGQFSL HILKHSTIVL KPRSF
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NAME          D244-AD4
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 249
      1 AACATTTTGC AATATAGTTT TCCTAGTCAG TTCTAGCCTC CTTTTCCTTA GAAATAATGG
     61 ATTATCATAT TTCTTTCCAT TTTCAAGCTC TTTTAGGGCT TTTAGCCTTT GTGTTCTTGT
    121 CTATTATCTT ATGGAGAAGA ACACTCACTT CAAGAAAATT AGCCCCTGAA ATCCCAGGGG
    181 CATGGCCTAT TATAGGCCAT CTTCGTCAGC TGAGTGGTAC TGATAAGAAT ATCCCATTTC
    241 CCCGAATATT GGGCGCTTTG GCAGATAAAT ATGGACCTGT CTTCACACTG AGAATAGGGA
    301 TGTACCCCTA TTTGATTGTC AACAATTGGG AAGCAGCTAA GGATTGTCTC ACAACGCATG
    361 ATAAGGACTT CGCTGCCCGA CCAACTTCTA TGGCTGGTGA AAGCATCGGG TACAAGTATG
    421 CGAGGTTTAC TTATGCTAAT TTTGGTCCTT ATTATAACCA AGTGCGCAAA CTAGCCCTAC
    481 AACATGTACC CTCGAGTACT AAACTCGAGA AAATGAAACA CATACGTGTT TCTGAATTGG
    541 AAACTAGCAT CAAAGAATTA TATTCTTTGA CGCTGGGCAA AAACAACATG CAAAAAGTGA
    601 ATATAAGTAA ATGGTTTGAA CAATTGACTT TAAACATAAT CGTGAAGACA ATTTGTGGCA
    661 AGAGATATAG CAACATAGAG GAGGATGAAG AGGCACAACG TTTCAGAAAG GCATTTAAGG
    721 GCATCATGTT TGTTGTAGGG CAAATTGTTT TATATGACGC AATTCCATTC CCATTGTTCA
    781 AATACTTTGA TTTCCAAGGT CATATACAAT TGATGAACAA AATTTATAAA GACTTAGATT
    841 CTATTCTTCA AGGATGGTTG GATGATCACA TGATGAACAA GGATGTAAAC AATAAGGATC
    901 AAGATGCCAT AGATGCCATG CTTAAGGTAA CACAACTTAA TGAATTCAAA GCCTATGGTT
    961 TTTCTCAGGC CACTGTGATC AAGTCGACAG TCTTGAGTTT GATCTTAGAT GGAAATGACA
   1021 CAACCGCTGT TCATTTGATA TGGGTAATGT CCTTATTACT GAACAATCCA CATGTTATGA
   1081 AACAAGGCCA AGAAGAGATA GACATGAAAG TGGGTAAAGA GAGGTGGATT GAAGATACTG
   1141 ACATAAAAAA TTTAGTGTAC CTTCAGGCTA TCGTTAAAGA GACATTGCGC TTGTATCCAC
   1201 CTGTTCCTTT TCTTTTACCA CACGAAGCAG TGCAAGATTG TAAAGTGACT GGTTACCACA
   1261 TTCCTAAAGG TACTCGTCTA TATATCAATG CGTGGAAAGT ACATCGCGAT CCTGAAATTT
   1321 GGTCAGAGCC CGAAAAGTTT ATGCCCAATA GATTCTTGAC TAGCAAAGCA AATATAGATG
   1381 CTCGCGGTCA AAATTTTGAA TTTATACCGT TTGGTTCTGG GAGACGGTCA TGTCCAGGGA
   1441 TAGGTTTTGC GACTTTAGTG ACACATCTGA CTTTTGGTCG CTTGCTTCAA GGTTTTGATT
   1501 TTAGTAAGCC ATCAAACACG CCAATTGACA TGACAGAAGG CGTAGGCGTT ACTTTGCCTA
   1561 AGGTTAATCA AGTTGAAGTT CTAATTACCC CTCGTTTACC TTCTAAGCTT TATTTATTTT
   1621 GAAAGTGCAA ATCATCAATC ATGGCTTGAG TAATTAGTTA TACTTTAATA TGTTTCTC
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SEQ. ID. NO. 250
      1 MDYHISFHFQ ALLGLLAFVF LSIILWRRTL TSRKLAPEIP GAWPIIGHLR QLSGTDKNIP
     61 FPRILGALAD KYGPVFTLRI GMYPYLIVNN WEAAKDCLTT HDKDFAARPT SMAGESIGYK
    121 YARFTYANFG PYYNQVRKLA LQHVPSSTKL EKMKHIRVSE LETSIKELYS LTLGKNNMQK
    181 VNISKWFEQL TLNIIVKTIC GKRYSNIEED EEAQRFRKAF KGIMFVVGQI VLYDAIPFPL
    241 FKYFDFQGHI QLMNKIYKDL DSILQGWLDD HMMNKDVNNK DQDAIDAMLK VTQLNEFKAY
    301 GFSQATVIKS TVLSLILDGN DTTAVHLIWV MSLLLNNPHV MKQGQEEIDM KVGKERWIED
    361 TDIKNLVYLQ AIVKETLRLY PPVPFLLPHE AVQDCKVTGY HIPKGTRLYI NAWKVHRDPE
    421 IWSEPEKFMP NRFLTSKANI DARGQNFEFI PFGSGRRSCP GIGFATLVTH LTFGRLLQGF
    481 DFSKPSNTPI DMTEGVGVTL PKVNQVEVLI TPRLPSKLYL F
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NAME          D247-AH1
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 251
         1 TGATAATGCT CTTTCTACTC TTTGTAGCCC TTCCTTTCAT TCTTATTTTT CTTCTTCCTA
        61 AATTCAAAAA TGGTGGAAAT AACAGATTGC CACCAGGTCC TATAGGTTTA CCATTCATTG
       121 GAAATTTGCA TCAATATGAT AGTATAACTC CTCATATCTA TTTTTGGAAA CTTTCCAAAA
       181 AATATGGCAA AATCTTCTCA TTAAAACTTG CTTCTACTAA TGTGGTAGTA GTTTCTTCAG
       241 CAAAATTAGC AAAAGAAGTA TTGAAAAAAC AAGATTTAAT ATTTTGTAGT AGACCATCTA
       301 TTCTTGGCCA ACAAAAACTG TCTTATTATG GTCGTGATAT TGCTTTTGCA CCTTATAATG
       361 ATTATTGGAG AGAAATGAGA AAAATTTGTG TTCTTCATCT TTTTAGTTTA AAAAAAGTTC
       421 AATTATTTAG TCCAATTCGT GAAGATGAAG TTTTTAGAAT GATTAAGAAA ATATCAAAAC
       481 AAGCTTCTAC TTCACAAATT ATTAATTTGA GTAATTTAAT GATTTCATTA ACAAGTACAA
       541 TTATTTGTAG AGTTGCTTTT GGTGTTAGGT TTGAAGAAGA AGCACATGCA AGGAAGAGAT
       601 TTGATTTTCT TTTGGCCGAG GCACAAGAAA TGATGGCTAG TTTCTTTGTA TCTGATTTTT
       661 TTCCCTTTTT AAGTTGGATT GATAAATTAA GTGGATTGAC ATATAGACTT GAGAGGAATT
       721 TCAAGGATTT GGATAATTTT TATGAAGAAC TCATTGAGCA ACATCAAAAT CCTAATAAGC
       781 CAAAATATAT GGAAGGAGAT ATTGTTGATC TTTTGCTACA ATTGAAGAAA GAGAAATTAA
       841 CACCACTTGA TCTCACTATG GAAGATATAA AAGGAATTCT CATGAATGTG TTAGTTGCAG
       901 GATCAGACAC TAGTGCAGCT GCTACTGTTT GGGCAATGAC AGCCTTGATA AAGAATCCTA
       961 AAGCCATGGA AAAAGTTCAA TTAGAAATCA GAAAATCAGT TGGGAAGAAA GGCATTGTAA
      1021 ATGAAGAAGA TGTCCAAAAC ATCCCTTATT TTAAAGCAGT GATAAAGGAA ATATTTAGAT
      1081 TGTATCCACC AGCTCCACTT TTAGTTCCAA GAGAATCAAT GGAAAAAACC ATATTAGAAG
      1141 GTTATGAAAT TCGGCCAAGA ACCATAGTTC ATGTTAACGC TTGGGCTATA GCAAGGGATC
      1201 CTGAAATATG GGAAAATCCA GATGAATTTA TACCTGAGAG ATTTTTGAAT AGCAGTACCG
      1261 ATTACAAGGG TCAAGATTTT GAGTTACTTC CATTTGGTGC AGGCAGAAGA GGTTGCCCAG
      1321 GTATTGCACT TGGGGGTTGCA TCCATGGAAC TTGCTTTGTC AAATCTTCTT TATGCATTTG
      1381 ATTGGGAGTT GCCTTATGGA GTGAAAAAAG AAGACATCGA CACAAACGTT AGGCCTGGAA
      1441 TTGCCATGCA CAAGAAAAAC GAACTTTGCC TTGTCCCAAA AAATTATTTA TAAATTATAT
      1501 TGGGACGTGG ATCTCAATTT AGTTCTGTGA GGTCAGC
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SEQ. ID. NO. 252
         1 MLFLLFVALP FILIFLLPKF KNGGNNRLPP GPIGLPFIGN LHQYDSITPH IYFWKLSKKY
        61 GKIFSLKLAS TNVVVVSSAK LAKEVLKKQD LIFCSRPSIL GQQKLSYYGR DIAFAPYNDY
       121 WREMRKICVL HLFSLKKVQL FSPIREDEVF RMIKKISKQA STSQIINLSN LMISLTSTII
       181 CRVAFGVRFE EEAHARKRFD FLLAEAQEMM ASFFVSDFFP FLSWIDKLSG LTYRLERNFK
       241 DLDNFYEELI EQHQNPNKPK YMEGDIVDLL LQLKKEKLTP LDLTMEDIKG ILMNVLVAGS
       301 DTSAAATVWA MTALIKNPKA MEKVQLEIRK SVGKKGIVNE EDVQNIPYFK AVIKEIFRLY
       361 PPAPLLVPRE SMEKTILEGY EIRPRTIVHV NAWAIARDPE IWENPDEFIP ERFLNSSTDY
       421 KGQDFELLPF GAGRRGCPGI ALGVASMELA LSNLLYAFDW ELPYGVKKED IDTNVRPGIA
       481 MHKKNELCLV PKNYL
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NAME   D248-AA6
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 253
        1 CCAAAATCAT GGCTCTATCT TTCATATTCA TATCCATAAC CCTAATTTTT CTAGTTCATA
       61 AACTCTACCA CCGTCTTAGA TTCAAACTAC CACCAGGTCC GCGGCCGTTA CCGGTGGTCG
      121 GAAACCTCTA CGACATAAAA CCGGTGAGAT TCCGGTGCTT TGCCGATTGG GCCAAAACTT
      181 ACGGTCCGAT TTTCTCAGTA TACTTTGGGT CACAGTTAAA TGTTGTGGTA ACAACAGCTG
      241 AATTAGCTAA AGAAGTATTG AAAGAAAATG ACCAGAATTT AGCAGATAGA TTTAGGACTA
      301 GACCTGCAAA TAATTTGAGC AGAAATGGGA TGGATTTGAT TTGGGCTGAT TATGGGCCTC
      361 ATTATGTGAA AGTAAGGAAG CTCTGTAATC TTGAGCTTTT TACTCCTAAA AGACTTGAAG
      421 CTCTTAGACC TATTAGAGAA GATGAAGTTA CTGCTATGGT TGAAAACATT TTCAAGGATT
      481 GTACTAAGCC TGATAACACA GGTAAAAGCT TGTTGATAAG AGAGTACTTA GGATCAGTAG
      541 CATTCAACAA CATTACAAGG TTAACATTTG GGAAAAGGTT CATGAACTCA AAAGGTGAGA
      601 TTGATGAGCA AGGTCAAGAA TTCAAGGGTA TTGTCTCTAA TGGCATCAAA ATTGGCGGAA
      661 AACTTCCCTT GGCAGAGTAT GTTCCATGGC TCCGTTGGTT TTTCACAATG GAAAACGAGG
      721 CACTCGTGAA GCACTCTGCA CGTAGAGACC GGTTAACAAG AATGATCATG GATGAACACA
      781 CACTGGCTCG CAAGAAAACT GGTGATACTA AGCAGCATTT TGTCGATGCA TTGCTTACTC
      841 TTCAGAAGCA GTATGATCTT AGTGATGACA CTGTTATTGG CCTCCTCTGG GATATGATTA
      901 CAGCAGGAAT GGACACAACA ACCATAACAG TGGAATGGGC AATGGCAGAA CTAGTTAAGA
      961 ACCCAAGAGT GCAACTAAAA GCTCAAGAGG AGCTTGACAG GGTAATCGGA ACGGATCGAA
     1021 TCATGTCAGA AACCGATTTC TCTAAACTTC CTTACCTACA ATGTGTAGCC AAAGAGGCTC
     1081 TAAGGTTGCA CCCTCCAACT CCTCTAATGC TTCCTCATAA GGCCAGTGCC AGTGTCAAAA
     1141 TTGGTGGTTA TGACATTCCT AAGGGGTCCA TCGTGCACGT GAACGTTTGG GCTGTCGCTC
     1201 GTGACCCAGC CGTGTGGAAG AACCCGTTGG AGTTCAGACC AGAGCGCTTC CTTGAGGAAG
     1261 ACGTTGACAT GAAGGGTCAC GACTATCGGT TATTGCCCTT TGGTGCAGGA AGGCGTGTTT
     1321 GCCCCGGTGC ACAACTTGCT ATCAACTTGG TCACATCTAT GTTGGGTCAT TTGTTGCATC
     1381 ATTTTACATG GCTCCGGCC CCGGGGGTTA ACCCGGAGGA TATTGACTTG GAGGAGAGCC
     1441 CTGGAACAGT AACTTACATG AAAAATCCAA TACAAGCTAT TCCAACTCCA AGATTGCCTG
     1501 CACACTTGTA TGGACGTGTG CCAGTGGATA TGTAAAACAT TTTGTTCTTT CCCTTTTTGG
     1561 TTATATGATG AG

SEQ. ID. NO. 254
        1 MALSFIFISI TLIFLVHKLY HRLRFKLPPG PRPLPVVGNL YDIKPVRFRC FADWAKTYGP
       61 IFSVYFGSQL NVVVTTAELA KEVLKENDQN LADRFRTRPA NNLSRNGMDL IWADYGPHYV
      121 KVRKLCNLEL FTPKRLEALR PIREDEVTAM VENIFKDCTK PDNTGKSLLI REYLGSVAFN
      181 NITRLTFGKR FMNSKGEIDE QGQEFKGIVS NGIKIGGKLP LAEYVPWLRW FFTMENEALV
      241 KHSARRDRLT RMIMDEHTLA RKKTGDTKQH FVDALLTLQK QYDLSDDTVI GLLWDMITAG
      301 MDTTTITVEW AMAELVKNPR VQLKAQEELD RVIGTDRIMS ETDFSKLPYL QCVAKEALRL
      361 HPPTPLMLPH KASASVKIGG YDIPKGSIVH VNVWAVARDP AVWKNPLEFR PERFLEEDVD
      421 MKGHDYRLLP FGAGRRVCPG AQLAINLVTS MLGHLLHHFT WAPAPGVNPE DIDLEESPGT
      481 VTYMKNPIQA IPTPRLPAHL YGRVPVDM

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NAME         D249-AE8
ORGANISM     NICOTIANA TABACUM
SEQ. ID. NO. 255
        1 AATCACTAAT TTTCATGTAC TCTCATAGGT CAAAAGTTTC AACCAAAATC ATGGCTCTAT
       61 CCTTCATATT CATATCCATA ACCCTAATTT TTCTAGTTCA TAAACTCTAC CACCGTCTTA
      121 GATTCAAACT ACCACCAGGT CCGCGGCCGT TACCGGTGGT CGGAAACCTC TACGACATAG
      181 AACCGGTGAG ATTCCGGTGC TTTGCCGATT GGGCCAAAAC TTACGGTCCG ATTTTCTCAG
      241 TATACTTTGG GTCACAGTTA AATGTTGTGG TAACAACAGC TGAATTAGCT AAAGAAGTAT
      301 TGAAAGAAAA TGACCAGAAT TTAGCAGATA GATTTAGGAC TAGACCTGCA AATAATTTGA
      361 GCAGAAATGG GATGGATTTG ATTTGGGCTG ATTATGGGCC TCATTATGTG AAAGTAAGGA
      421 AGCTCTGTAA TCTTGAGCTT TTTACTCCTA AAAGACTTGA AGCTCTTAGA CCTATTAGAG
      481 AAGATGAAGT TACTGCTATG GTTGAAAACA TTTTCAAGGA TTGTACTAAG CCTGATAACA
      541 CAGGTAAAAG CTTGTTGATA AGAGAGTACT TAGGATCAGT AGCATTCAAC AACATTACAA
      601 GGTTAACATT TGGGAAAAGG TTCATGAACT CAAAAGGTGA GATTGATGAG CAAGGTCAAG
      661 AATTCAAGGG TATTGTCTCT AATGGCATCA AAATTGGCGG AAAACTTCCC TTGGCAGAGT
      721 ATGTTCCATG GCTCCGTTGG TTTTTCACAA TGGAAAACGA GGCACTCGTG AAGCACTCTG
      781 CACGTAGAGA CCGGTTAACA AGAATGATCA TGGATGAACA CACACTGGCT CGCAAGAAAA
      841 CTGGTGATAC TAAGCAGCAT TTTGTCGATG CATTGCTTAC TCTTCAGAAG CAGTATGATC
      901 TTAGTGATGA CACTGTTATT GGCCTCCTCT GGGATATGAT TACAGCAGGA ATGGACACAA
      961 CAACCATAAC AGTGGAATGG GCAATGGCAG AACTAGTTAA GAACCCAAGA GTGCAACTAA
     1021 AAGCTCAAGA GGAGCTTGAC AGGGTAATCG GAACGGATCG AATCATGTCA GAAACCGATT
     1081 TCTCTAAACT TCCTTACCTA CAATGTGTAG CCAAAGAGGC TCTAAGGTTG CACCCTCCAA
     1141 CTCCTCTAAT GCTTCCTCAT AGGGCCAGTG CCAGTGTCAA AATTGGTGGT TATGACATTC
     1201 CTAAGGGGTC CATCGTGCAC GTGAACGTTT GGGCTGTCGC TCGTGACCCA GCCGTGTGGA
     1261 AGAACCCGTT GGAGTTCAGA CCAGAGCGCT TCCTTGAGGA AGACGTTGAC ATGAAGGGTC
     1321 ACGACTATCG GTTATTGCCC TTTGGTGCAG GAAGGCGTGT TTGCCCCGGT GCACAACTTG
     1381 CTATCAACTT GGTCACATCT ATGTTGGGTC ATTTGTTGCA TCATTTTACA TGGGCTCCGG
     1441 CCCCGGGGGT TAACCCGGAG GATATTGACT GGAGGAGAG CCCTGGAACA GTAACTTACA
     1501 TGAAAAATCC AATACAAGCT ATTCCAACTC CAAGATTGCC TGCACACTTG TATGGACGTG
     1561 TGCCAGTGGA TATGTAAAAC
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SEQ. ID. NO. 256
        1 MYSHRSKVST KIMALSFIFI SITLIFLVHK LYHRLRFKLP PGPRPLPVVG NLYDIEPVRF
       61 RCFADWAKTY GPIFSVYFGS QLNVVVTTAE LAKEVLKEND QNLADRFRTR PANNLSRNGM
      121 DLIWADYGPH YVKVRKLCNL ELFTPKRLEA LRPIREDEVT AMVENIFKDC TKPDNTGKSL
      181 LIREYLGSVA FNNITRLTFG KRFMNSKGEI DEQGQEFKGI VSNGIKIGGK LPLAEYVPWL
      241 RWFFTMENEA LVKHSARRDR LTRMIMDEHT LARKKTGDTK QHFVDALLTL QKQYDLSDDT
      301 VIGLLWDMIT AGMDTTTITV EWAMAELVKN PRVQLKAQEE LDRVIGTDRI MSETDFSKLP
      361 YLQCVAKEAL RLHPPTPLML PHRASASVKI GGYDIPKGSI VHVNVWAVAR DPAVWKNPLE
      421 FRPERFLEED VDMKGHDYRL LPFGAGRRVC PGAQLAINLV TSMLGHLLHH FTWAPAPGVN
      481 PEDIDLEESP GTVTYMKNPI QAIPTPRLPA HLYGRVPVDM
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NAME          D250-AC11
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 257
        1 ATAATGCTCT TTCTACTCTT TGTAGCCCTT CCTTTCATTC TTATTTTTCT TCTTCCTAAA
       61 TTCAAAAATG GTGGAAATAA CAGATTGCCA CCAGGTCCTA TAGGTTTACC ATTCATTGGA
      121 AATTTGCATC AATATGATAG TATAACTCCT CATATCTATT TTTGGAAACT TTCCAAAAAA
      181 TATGGCAAAA TCTTCTCATT AAAACTTGCT TCTACTAATG TGGTAGTAGT TTCTTCAGCA
      241 AAATTAGCAA AAGAAGTATT GAAAAAACAA GATTTAATAT TTTGTAGTAG ACCATCTATT
      301 CTTGGCCAAC AAAAACTGTC TTATTATGGT CGTGATATTG CTTTTGCACC TTATAATGAT
      361 TATTGGAGAG AAATGAGAAA AATTTGTGTT CTTCATCTTT TTAGTTTAAA AAAAGTTCAA
      421 TTATTTAGTC CAATTCGTGA AGATGAAGTT TTTAGAATGA TTAAGAAAAT ATCAAAACAA
      481 GCTTCTACTT CACAAATTAT TAATTTGAGT AATTTAATGA TTTCATTAAC AAGTACAATT
      541 ATTTGTAGAG TTGCTTTTGG TGTTAGGTTT GAAGAAGAAG CACATGCAAG GAAGAGATTT
      601 GATTTTCTTT TGGCCGAGGC ACAAGAAATG ATGGCTAGTT TCTTTGTATC TGATTTTTTT
      661 CCCTTTTTAA GTTAGATTGA CAAATTAAGT GGATTGACAT ATAGACTTGA GAGGAATTTC
      721 AAGGATTTGG ATAATTTTTA TGAAGAACTC ATTGAGCAAC ATCAAAATCC TAATAAGCCA
      781 AAATATATGG AAGGAGATAT TGTTGATCTT TTGCTACAAT TGAAGAAAGA GAAATTAACA
      841 CCACTTGATC TCACTATGGA AGATATAAAA GGAATTCTCA TGAATGTGTT AGTTGCAGGA
      901 TCAGACACTA GTGCAGCTGC TACTGTTTGG GCAATGACAG CCTTGATAAA GAATCCTAAA
      961 GCCATGGAAA AAGTTCAATT AGAAATCAGA AAATCAGTTG GGAAGAAAGG CATTGTAAAT
     1021 GAAGAAGATG TCCAAAACAT CCCTTATTTT AAAGCAGTGA TAAAGGAAAT ATTTAGATTG
     1081 TATCCACCAG CTCCACTTTT AGTTCCAAGA GAATCAATGG AAAAAACCAT ATTAGAAGGT
     1141 TATGAAATTC GGCCAAGAAC CATAGTTCAT GTTAACGCTT GGGCTATAGC AAGGGATCCT
     1201 GAAATATGGG AAAATCCAGA TGAATTTATA CCTGAGAGAT TTTTGAATAG CAGTATCGAT
     1261 TACAAGGGTC AAGATTTTGA GTTACTTCCA TTTGGTGCAG GCAGAAGAGG TTGCCCAGGT
     1321 ATTGCACTTG GGGTTGCATC CATGGAACTT GCTTTGTCAA ATCTTCTTTA TGCATTTGAT
     1381 TGGGAGTTGC CTTATGGAGT GAAAAAAGAA GACATCGACA CAAACGTTAG GCCTGGAATT
     1441 GCCATGCACA AGAAAAACGA ACTTTGCCTT GTCCCAAAAA AATTATTTAT AAATTATATT
     1501 GGGACGTGGA TCTCATGCTA GTTCTGTGCG GTCAGCTAAG CTTA
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SEQ. ID. NO. 258
        1 MLFLLFVALP FILIFLLPKF KNGGNNRLPP GPIGLPFIGN LHQYDSITPH IYFWKLSKKY
       61 GKIFSLKLAS TNVVVVSSAK LAKEVLKKQD LIFCSRPSIL GQQKLSYYGR DIAFAPYNDY
      121 WREMRKICVL HLFSLKKVQL FSPIREDEVF RMIKKISKQA STSQIINLSN LMISLTSTII
      181 CRVAFGVRFE EEAHARKRFD FLLAEAQEMM ASFFVSDFFP FLS.IDKLSG LTYRLERNFK
      241 DLDNFYEELI EQHQNPNKPK YMEGDIVDLL LQLKKEKLTP LDLTMEDIKG ILMNVLVAGS
      301 DTSAAATVWA MTALIKNPKA MEKVQLEIRK SVGKKGIVNE EDVQNIPYFK AVIKEIFRLY
      361 PPAPLLVPRE SMEKTILEGY EIRPRTIVHV NAWAIARDPE IWENPDEFIP ERFLNSSIDY
      421 KGQDFELLPF GAGRRGCPGI ALGVASMELA LSNLLYAFDW ELPYGVKKED IDTNVRPGIA
      481 MHKKNELCLV PKKLFINYIG TWISC
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NAME   D259-AB9
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 259
         1 CACATTGAGT CCTCTCCCAA ATCACTGATT CACCACCAAA AGTACCAACA ATTCAATGGA
        61 AGGTACAAAC TTGACTACAT ATGCAGCAGT ATTTCTTGAT ACTCTGTTTC TTTTGTTCCT
       121 TTCCAAACTT CTTCGCCAGA GGAAACTCAA TTTACCTCCA GGCCCAAAAC CATGGCCGAT
       181 CATCGGAAAC TTAAACCTTA TTGGCAATCT TCCTCATCGC TCAATCCACG AACTCTCCCT
       241 CAAGTACGGA CCCGTTATGC AACTCCAATT CGGGTCTTTC CCCGTTGTAG TTGGATCCTC
       301 CGTCGAAATG GCTAAGATTT TCCTCAAATC CATGGATATT AACTTTGTAG GCAGGCCTAA
       361 AACGGCTGCC GGAAAATACA CAACGTACAA TTATTCCGAT ATTACATGGT CTCCTTACGG
       421 ACCATATTGG CGCCAGGCAC GTAGGATGTG CCTAACGGAA TTATTCAGCA CGAAACGTCT
       481 CGATTCATAC GAGTATATTC GGGCTGAGGA GTTGCATTCT CTTCTCCATA ATTTGAACAA
       541 AATATCAGGG AAACCAATTG TGTTGAAAGA TTATTTGACG ACGTTGAGTT TAAATGTTAT
       601 TAGCAGGATG GTACTGGGGA AAAGGTATTT GGACGAATCC GAGAACTCGT TCGTGAATCC
       661 TGAGGAATTT AAGAAGATGT TGGACGAATT GTTTTTGCTA AATGGTGTAC TTAATATTGG
       721 AGATTCAATT CCATGGATTG ATTTCATGGA TTTGCAAGGT TATGTTAAGA GGATGAAAGT
       781 AGTGAGCAAG AAATTCGACA AGTTTTTAGA GCATGTTATT GATGAGCATA ACATTAGGAG
       841 AAATGGAGTG GAGAATTATG TTGCTAAGGA TATGGTGGAT GTTTTGTTGC AGCTTGCTGA
       901 TGATCCGAAG TTGGAAGTTA AGCTGGAGAG ACATGGAGTC AAAGCATTCA CTCAGGATAT
       961 GCTGGCTGGT GGAACCGAGA GTTCAGCAGT GACAGTGGAG TGGGCAATTT CAGAGCTGCT
      1021 AAAGAAGCCG GAGATTTTCA AAAGGCTAC AGAAGAATTG GATCGAGTAA TTGGGCAGAA
      1081 TAGATGGGTA CAAGAAAAGG ACATTCCAAA TCTTCCTTAC ATAGAGGCAA TAGTCAAAGA
      1141 GACTATGCGA CTGCACCCCG TGGCACCAAT GTTGGTGCCA CGTGAGTGTC GAGAAGATAT
      1201 TAAGGTAGCA GGCTACGACG TTCAGAAAGG AACTAGGGTT CTCGTGAGTG TATGGACTAT
      1261 TGGAAGAGAC CCTACATTGT GGGACGAGCC TGAGGTGTTC AAGCCGGAGA GATTCCATGA
      1321 AAAGTCCATA GATGTTAAAG GACATGATTA TGAGCTTTTG CCATTTGGAG CGGGGAGAAG
      1381 AATGTGCCCG GGTTATAGCT TGGGGCTCAA GGTGATTCAA GCTAGCTTAG CTAATCTTCT
      1441 ACATGGATTT AACTGGTCAT TGCCTGATAA TATGACTCCT GAGGACCTCA ACATGGATGA
      1501 GATTTTTGGG CTCTCTACAC CTAAAAAATT TCCACTTGCT ACTGTGATTG AGCCAAGACT
      1561 TTCACCAAAA CTTTACTCTG TTGATTCAG CAGTTCTATG GTTCCGTCAA GATAG

SEQ. ID. NO. 260
         1 MEGTNLTTYA AVFLDTLFLL FLSKLLRQRK LNLPPGPKPW PIIGNLNLIG NLPHRSIHEL
        61 SLKYGPVMQL QFGSFPVVVG SSVEMAKIFL KSMDINFVGR PKTAAGKYTT YNYSDITWSP
       121 YGPYWRQARR MCLTELFSTK RLDSYEYIRA EELHSLLHNL NKISGKPIVL KDYLTTLSLN
       181 VISRMVLGKR YLDESENSFV NPEEFKKMLD ELFLLNGVLN IGDSIPWIDF MDLQGYVKRM
       241 KVVSKKFDKF LEHVIDEHNI RRNGVENYVA KDMVDVLLQL ADDPKLEVKL ERHGVKAFTQ
       301 DMLAGGTESS AVTVEWAISE LLKKPEIFKK ATEELDRVIG QNRWVQEKDI PNLPYIEAIV
       361 KETMRLHPVA PMLVPRECRE DIKVAGYDVQ KGTRVLVSVW TIGRDPTLWD EPEVFKPERF
       421 HEKSIDVKGH DYELLPFGAG RRMCPGYSLG LKVIQASLAN LLHGFNWSLP DNMTPEDLNM
       481 DEIFGLSTPK KFPLATVIEP RLSPKLYSV

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NAME          D218A-AC2
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 261
      1 CTTCTTCCTT CCTAACTAAA AATGGAGATT CAGTTTTCTA ACTTAGTTGC ATTCTTGCTC
     61 TTTCTCTCCA GCATCTTTCT TGTATTCAAA AAATGGAAAA CCAGAAAACT AAATTTGCCT
    121 CCTGGTCCAT GGAAATTACC TTTTATTGGA AGTTTACACC ATTTGGCTGT GGCAGGTCCA
    181 CTTCCTCACC ATGGCCTAAA AAATTTAGCC AAACGCTATG GTCCTCTTAT GCATTTACAA
    241 CTTGGACAAA TTCCTACACT CGTCATATCA TCACCTCAAA TGGCAAAAGA AGTACTAAAA
    301 ACTCACGACC TCGCTTTTGC CACTAGACCA AAGCTTGTCG TGGCCGACAT CATTCACTAC
    361 GACAGCACGG ACATAGCACT TTCGCCATAC GGTGAATACT GGAGACAAAT TCGTAAAATT
    421 TGCATATTGG AACTCTTGAG TGCCAAGATG GTCAAGTTTT TTAGCTCGAT TCGCCAAGAT
    481 GAGCTCTCGA AGATGGTTTC ATCTATACGA ACGACGCCCA ATCTTCCAGT CAATCTTACC
    541 GACAAGATTT TTTGGTTTAC GAGTTCGGTA ATTTGTAGAT CAGCTTTAGG GAAGATATGT
    601 GGTGACCAAG ACAAATTGAT CATTTTTATG AGGGAAATAA TATCATTGGC AGGTGGATTT
    661 AGTATTGCTG ATTTTTTCCC TACATGGAAA ATGATTCATG ATATTGATGG TTCAAAATCT
    721 AAACTGGTGA AGGCACATCG TAAGATTGAT GAAATTTTGG AAAATGTGGT AAATGAGCAC
    781 AAACAGAATC GAGCAGATGG TAAAAAGGGT AATGGTGAAT TTGGTGGAGA AGATCTGATT
    841 GATGTTTTGT TAAGAGTTAG AGAAAGTGGA GAAGTTCAAA TTCCAATCAC AGATGACAAT
    901 ATCAAATCAA TATTAATCGA CATGTTCTCT GCCGGATCGG AAACATCATC GACAACTATA
    961 ATTTGGGCAT TAGCTGAAAT GATGAAGAAA CCAAGTGTTT TAGCAAAGGC ACAAGCTGAA
   1021 GTGAGCCAAG CTTTGAAGGG GAAGAAAATT AGTTTTCAAG AGATTGATAT TGATAAGCTA
   1081 AAGTATTTGA AGTTAGTGAT CAAAGAAACT TTAAGAATGC ACCCTCCAAT TCCTCTGTTA
   1141 GTCCCTAGAG AATGTATGGA AGATACAAAG ATTGATGGTT ACAATATACC TTTCAAAACA
   1201 AGAGTCATTG TTAATGCATG GGCAATTGGA CGAGATCCTC AAAGTTGGGA TGATCCTGAA
   1261 AGCTTTACGC CAGAGAGATT TGAGAATAAT CTATTGATT TTCTTGGAAA TCATCATCAA
   1321 TTTATTCCAT TTGGTGCAGG AAGAAGGATT TGTCCTGGAA TGCTATTTGG TTTAGCTAAT
   1381 GTTGGACAAC CTTTAGCTCA GTTACTTTAT CACTTCGATT GGAAACTCCC TAATGGACAA
   1441 ACTCACCAAA ATTTCGACAT GACTGAGTCA CCTGGAATTT CTGCTACAAG AAAGGATGAT
   1501 CTTATTTTGA TTGCCACTCC TGCTCATTCT TGATTAAGTA TTGCTGCTTT TCTATTGGAG
   1561 AATTTTCAAA ATTCATCCAC AATATATAGT GTTTGCTAGA GTTGGTTAGC

SEQ. ID. NO. 262
      1 MEIQFSNLVA FLLFLSSIFL VFKKWKTRKL NLPPGPWKLP FIGSLHHLAV AGPLPHHGLK
     61 NLAKRYGPLM HLQLGQIPTL VISSPQMAKE VLKTHDLAFA TRPKLVVADI IHYDSTDIAL
    121 SPYGEYWRQI RKICILELLS AKMVKFFSSI RQDELSKMVS SIRTTPNLPV NLTDKIFWFT
    181 SSVICRSALG KICGDQDKLI IFMREIISLA GGFSIADFFP TWKMIHDIDG SKSKLVKAHR
    241 KIDEILENVV NEHKQNRADG KKGNGEFGGE DLIDVLLRVR ESGEVQIPIT DDNIKSILID
    301 MFSAGSETSS TTIIWALAEM MKKPSVLAKA QAEVSQALKG KKISFQEIDI DKLKYLKLVI
    361 KETLRMHPPI PLLVPRECME DTKIDGYNIP FKTRVIVNAW AIGRDPQSWD DPESFTPERF
    421 ENNSIDFLGN HHQFIPFGAG RRICPGMLFG LANVGQPLAQ LLYHFDWKLP NGQTHQNFDM
    481 TESPGISATR KDDLILIATP AHS
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NAME   D210-BD4
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 263
      1 CTTTCATCAT ATGGCATGAA ATGGGAAATG CTCACAACAG CAAAATTGCA GCAATCTGTT
     61 TGATAATTTT CTTGGTATAT AAAGCATGGG AATTGTTGAA GTGGATATGG ATTAAGCCAA
    121 AGAAACTGGA GAGTTGCCTC AGAAAACAGG GACTCAAAGG AAATtCCTAC GGGCTATTCT
    181 ATGGAGATAT GAAAGAATtG TCCAAAAGTC TCAAGGAAAT CAATTCAAAG CCCATCATCA
    241 ATCTATCAAA TGAAGTAGCC CCAAGAATCA TTCCTTATtA TCTTGAAATC ATCCAAAAAT
    301 ATGGTAAAAG ATGTTTTGTT TGGCAAGGAC CAACCCCCGC AATATTAATA ACAGAGCCAG
    361 AATTAATAAA GGAGATATTT GGTAAGAACT ATGTTTTTCA GAAGCCTAAT AATCCCAACC
    421 CACTGACCAA GTTATTGGCT CGAGGTGTTG TAAGCTACGA GGAAGAAAAA TGGGCAAAAC
    481 ACAGAAAGAT CTTAAATCCT GCCTTTCATA TGGAGAAGTT GAAGCATATG CTACCAGCAT
    541 TTTACTTGAG CTGTAGTGAG ATGCTGAACA AATGGGAGGA GATTATCCCA GTAAAAGAAT
    601 CAAATGAGTT GGACATTTGG CCTCATCTTC AAAGAATGAC AAGTGATGTG ATTTCTCGTG
    661 CTGCCTTTGG TAGTAGCTAC GAAGAAGGAA GAAGAATATT TGAACTTCAA GAAGAACAAG
    721 CTGAGTATCT AACGAAGACA TTCAATTCAG TTTATATCCC AGGTTCCAGA TTTTTTCCCA
    781 ATAAAATGAA CAAAAGAATG AAAGAATGTG AAAAGGAAGT ACGAGAAACA ATTACGTGTC
    841 TAATTGACAA CAGATTAAAG GCAAAAGAAG AAGGCAATGG CAAGGCCCTC AATGATGACC
    901 TATTGGGTAT ATTATTAGAG TCAAATTCTA TAGAAATTGA AGAACATGGT AACAAGAAGT
    961 TTGGAATGAG TATACCTGAA GTAATTGAAG AGTGCAAATT ATTCTATTTT GCTGGCCAAG
   1021 AGACTACATC AGTATTGCTT GTGTGGACAC TGATTTTGTT AGGGAGAAAt cCAGAATGGC
   1081 AGGAACGTGC TAGAGAGGAA GTTTTTCAAG CCTTTGGAAG TGATAAACCA ACTTTTGACG
   1141 AATTATATCG CTTGAAAATT GTGACGATGA TTTTGTACGA GTCTTTAAGG TTATATCCAC
   1201 CAATAGCAAC TCGTACTCGA AGGACTAATG AAGAAACAAA ATTAGGGGAA CTAGATTTAC
   1261 CAAAGGGTGC ACTGCTCTTT ATACCAACAA TCTTATTACA TCTTGACAGG GAAATTTGGG
   1321 GTGAAGATGC AGATGAGTTC AATCCGGAGA GATTTAGCGA AGGGGTGGCA AAGGCAACAA
   1381 AGGGGAAAAT GACATATTTT CCATTTGGTG CAGGACCGCG AAAATGCATT GGGCAAAACT
   1441 TCGCGATTTT GGAAGCAAAA ATGGCTATAG CTATGATTCT ACAACGCTTC TCCTTCGAGC
   1501 TCTCTCCATC TTATACACAC TCTCCATACA CTGTGGTCAC TTTGAAACCC AAATATGGTG
   1561 CTCCCCTAAT AATGCACAGG CTGTAGTCCT GTGAGAATAT GCTATCCGAG G

SEQ. ID. NO. 264
      1 MGNAHNSKIA AICLIIFLVY KAWELLKWIW IKPKKLESCL RKQGLKGNSY GLFYGDMKEL
     61 SKSLKEINSK PIINLSNEVA PRIIPYYLEI IQKYGKRCFV WQGPTPAILI TEPELIKEIF
    121 GKNYVFQKPN NPNPLTKLLA RGVVSYEEEK WAKHRKILNP AFHMEKLKHM LPAFYLSCSE
    181 MLNKWEEIIP VKESNELDIW PHLQRMTSDV ISRAAFGSSY EEGRRIFELQ EEQAEYLTKT
    241 FNSVYIPGSR FFPNKMNKRM KECEKEVRET ITCLIDNRLK AKEEGNGKAL NDDLLGILLE
    301 SNSIEIEEHG NKKFGMSIPE VIEECKLFYF AGQETTSVLL VWTLILLGRN PEWQERAREE
    361 VFQAFGSDKP TFDELYRLKI VTMILYESLR LYPPIATRTR RTNEETKLGE LDLPKGALLF
    421 IPTILLHLDR EIWGEDADEF NPERFSEGVA KATKGKMTYF PFGAGPRKCI GQNFAILEAK
    481 MAIAMILQRF SFELSPSYTH SPYTVVTLKP KYGAPLIMHR L

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NAME          D233-AG7
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 265
      1 CTCATTATCC ATCACCTAAA ATGGAGAATT CTTGGGTTTT TCTAGCCTTG GCAGGGCTAT
     61 CTGCATTAGC TTTTCTCTGT AAAATAATCA CCTGTCGAAG ACCGGTTAAC CGGAAAATAC
    121 CACCAGGTCC AAAACCATGG CCCATCATTG GCAATTTGAA CCTACTTGGT CCTATACCAC
    181 ATCAATCTTT TGACTTGCTT TCCAAAAAAT ATGGAGAGTT GATGCTGCTG AAATTTGGCT
    241 CCAGGCCAGT TCTTGTTGCT TCATCTGCTG AAATGGCAAA ACAGTTTTTA AAAGTACATG
    301 ATGCTAATTT CGCCTCCCGT CCTATGCTAG CTGGTGGAAA GTATACAAGC TATAACTATT
    361 GTGACATGAC ATGGGCACCC TATGGTCCCT ATTGGCGCCA AGCACGACGA ATTTACCTTA -
    421 ACCAGATATT TACTCCGAAA AGGCTAGACT CGTTCGAGTA CATTCGTGTT GAAGAAAGGC
    481 AGGCCTTGAT TTCCCAGCTG AATTCCCTTG CTGGAAAGCC ATTTTTTCTC AAAGACCATT
    541 TGTCGCGATT TAGCCTCTGC AGCATGACAA GGATGGTTTT GAGCAACAAG TATTTTGGTG
    601 AATCAACAGT TAGAGTAGAA GATTTGCAGT ACCTGGTAGA TCAATGGTTC TTACTTAATG
    661 GTGCTTTCAA CATTGGAGAT TGGATTCCAT GGCTCAGCTT CTTGGACCTA CAAGGCTATG
    721 TGAAACAAAT GAAGGCTTTG AAAAGAACTT TTGATAAGTT CCACAACATT GTGCTAGATG
    781 ATCACAGGGC TAAGAAGAAT GCAGAGAAGA ACTTTGTCCC AAAAGACATG GTTGATGTCT
    841 TGTTGAAGAT GGCTGAAGAT CCTAATCTGG AAGTCAAACT CACTAATGAC TGTGTCAAAG
    901 GGTTAATGCA GGATTTACTA ACTGGAGGAA CAGATAGCTT AACAGCAGCA GTGCAATGGG
    961 CATTTCAAGA ACTTCTTAGA CAGCCAAGGG TTATTGAGAA GGCAACCGAA GAGCTTGACC
   1021 GGATTGTCGG GAAAGAGAGA TGGGTAGAAG AGAAAGATTG CTCGCAGCTA TCTTACGTTG
   1081 AAGCAATCCT CAAGGAAACA CTAAGGTTAC ATCCTCTAGG AACTATGCTA GCACCGCATT
   1141 GTGCTATAGA AGATTGTAAC GTGGCTGGTT ATGACATACA GAAAGGAACG ACCTTTCTGG
   1201 TGAATGTTTG GACCATTGGA AGGGACCCAA AATACTGGGA TAGAGCACAA GAGTTTCTCC
   1261 CCGAGAGATT TTTAGAGAAC GACATTGATA TGGACGGACA TAACTTTGCT TTCTTGCCAT
   1321 TTGGCTCGGG GCGAAGGAGG TGCCCTGGCT ATAGCCTTGG ACTTAAGGTT ATCCGAGTAA
   1381 CATTAGCCAA CATGTTGCAT GGATTCAACT GGAAATTACC TGAAGGTATG AAGCCAGAAG
   1441 ATATAAGTGT GGAAGAACAT TATGGGCTCA CTACACATCC TAAGTTTCCT GTTCCTGTGA
   1501 TCTTGGAATC TAGACTTTCT TCAGATCTCT ATTCCCCCAT CACTTAATCC TAAGTGCTTC
   1561 CTATTATAGC

SEQ. ID. NO. 266
      1 MENSWVFLAL AGLSALAFLC KIITCRRPVN RKIPPGPKPW PIIGNLNLLG PIPHQSFDLL
     61 SKKYGELMLL KFGSRPVLVA SSAEMAKQFL KVHDANFASR PMLAGGKYTS YNYCDMTWAP
    121 YGPYWRQARR IYLNQIFTPK RLDSFEYIRV EERQALISQL NSLAGKPFFL KDHLSRFSLC
    181 SMTRMVLSNK YFGESTVRVE DLQYLVDQWF LLNGAFNIGD WIPWLSFLDL QGYVKQMKAL
    241 KRTFDKFHNI VLDDHRAKKN AEKNFVPKDM VDVLLKMAED PNLEVKLTND CVKGLMQDLL
    301 TGGTDSLTAA VQWAFQELLR QPRVIEKATE ELDRIVGKER WVEEKDCSQL SYVEAILKET
    361 LRLHPLGTML APHCAIEDCN VAGYDIQKGT TFLVNVWTIG RDPKYWDRAQ EFLPERFLEN
    421 DIDMDGHNFA FLPFGSGRRR CPGYSLGLKV IRVTLANMLH GFNWKLPEGM KPEDISVEEH
    481 YGLTTHPKFP VPVILESRLS SDLYSPIT
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NAME          D257-AE4
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 267
        1 CACATTGAGT CCTCTCCCAA ATCACTGATT CACCACCAAA AGTACCAACA ATTCAATGGA
       61 AGGTACAAAC TTGACTACAT ATGCAGCAGT ATTTCTTGAT ACTCTGTTTC TTTTGTTCCT
      121 TTCCAAACTT CTTCGCCAGA GGAAACTCAA TTTACCTCCA GGCCCAAAAC CATGGCCGAT
      181 CATCGGAAAC TTAAACCTTA TTGGCAATCT TCCTCATCGC TCAATCCACG AACTCTCCCT
      241 CAAGTACGGA CCCGTTATGC AACTCCAATT CGGGTCTTTC CCCGTTGTAG TTGGATCCTC
      301 CGTCGAAATG GCTAAGATTT TCCTCAAATC CATGGATATT AACTTTGTAG GCAGGCCTAA
      361 AACGGCTGCC GGAAAATACA CAACGTACAA TTATTCCGAT ATTACATGGT CTCCTTACGG
      421 ACCATATTGG CGCCAGGCAC GTAGGATGTG CCTAACGGAA TTATTCAGCA CGAAACGTCT
      481 CGATTCATAC GAGTATATTC GGGCTGAGGA GTTGCATTCT CTTCTCCATA ATTTGAACAA
      541 AATATCAGGG AAACCAATTG TGTTGAAAGA TTATTTGACG ACGTTGAGTT AAATGTTAT
      601 TAGCAGGATG GTACTGGGGA AAAGGTATTT GGACGAATCC GAGAACTCGT TCGTGAATCC
      661 TGAGGAATTT AAGAAGATGT TGGACGAATT GTTTTTGCTA AATGGTGTAC TTAATATTGG
      721 AGATTCAATT CCATGGATTG ATTTCATGGA TTTGCAAGGT TATGTTAAGA GGATGAAAGT
      781 AGTGAGCAAG AAATTCGACA AGTTTTTAGA GCATGTTATT GATGAGCATA ACATTAGGAG
      841 AAATGGAGTG GAGAATTATG TTGCTAAGGA TATGGTGGAT GTTTTGTTGC AGCTTGCTGA
      901 TGATCCGAAG TTGGAAGTTA AGCTGGAGAG ACATGGAGTC AAAGCATTCA CTCAGGATAT
      961 GCTGGCTGGT GGAACCGAGA GTTCAGCAGT GACAGTGGAG TGGGCAATTT CAGAGCTGCT
     1021 AAAGAAGCCG GAGATTTTCA AAAAGGCTAC AGAAGAATTG GATCGAGTAA TTGGGCAGAA
     1081 TAGATGGGTA CAAGAAAAGG ACATTCCAAA TCATCcTTAC ATAGAGGCAA TAGTCAAAGA
     1141 GACTATGCGA CTGCACCCCG TGGCACCAAT GTTGGTGCCA CGTGAGTGTC GAGAAGATAT
     1201 TAAGGTAGCA GGCTACGACG TTCAGAAAGG AACTAGGGTT CTCGTGAGTG TATGGACTAT
     1261 TGGAAGAGAC CCTACATTGT GGGACGAGCC TGAGGTGTTC AAGCCGGAGA GATTCCATGA
     1321 AAAGTCCATA GATGTTAAAG GACATGATTA TGAGCTTTTG CCATTTGGAG CGGGGGAGAAG
     1381 AATGTGCCCG GGTTATAGCT TGGGGCTCAA GGTGATTCAA GCTAGCTTAG CTAATCTTCT
     1441 ACATGGATTT AACTGGTCAT TGCCTGATAA TATGACTCCT GAGGACCTCA ACATGGATGA
     1501 GATTTTTGGG CTCTCTACAC CTAAAAAATT TCCACTTGCT ACTGTGATTG AGCCAAGACT
     1561 TTCACCAAAA CTTTACTCTG TTTGATTCAG CAGTTCTATG GATCCGTCAA GATAGAC

SEQ. ID. NO. 268
        1 MEGTNLTTYA AVFLDTLFLL FLSKLLRQRK LNLPPGPKPW PIIGNLNLIG NLPHRSIHEL
       61 SLKYGPVMQL QFGSFPVVVG SSVEMAKIFL KSMDINFVGR PKTAAGKYTT YNYSDITWSP
      121 YGPYWRQARR MCLTELFSTK RLDSYEYIRA EELHSLLHNL NKISGKPIVL KDYLTTLSLN
      181 VISRMVLGKR YLDESENSFV NPEEFKKMLD ELFLLNGVLN IGDSIPWIDF MDLQGYVKRM
      241 KVVSKKFDKF LEHVIDEHNI RRNGVENYVA KDMVDVLLQL ADDPKLEVKL ERHGVKAFTQ
      301 DMLAGGTESS AVTVEWAISE LLKKPEIFKK ATEELDRVIG QNRWVQEKDI PNHPYIEAIV
      361 KETMRLHPVA PMLVPRECRE DIKVAGYDVQ KGTRVLVSVW TIGRDPTLWD EPEVFKPERF
      421 HEKSIDVKGH DYELLPFGAG RRMCPGYSLG LKVIQASLAN LLHGFNWSLP DNMTPEDLNM
      481 DEIFGLSTPK KFPLATVIEP RLSPKLYSV
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NAME   D268-AE2
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 269
      1 TGCAATATAG TTTTCCTAGT CAGTTCTAGC CTCCTTTTCC TTAGAAATAA TGGATTATCA
     61 TATTTCTTTC CATTTTCAAG CTCTTTTAGG GCTTTTAGCC TTTGTGTTCT TGTCTATTAT
    121 CTTATGGAGA AGAACACTCA CTTCAAGAAA ATTAGCCCCT GAAATCCCAG GGGCATGGCC
    181 TATTATAGGC CATCTTCGTC AGCTGAGTGG TACTGATAAG AATATCCCAT TTCCCCGAAT
    241 ATTGGGCGCT TTGGCAGATA AATATGGACC TGTCTTCACA CTGAGAATAG GGATGTACCC
    301 CTATTTGATT GTCAACAATT GGGAAGCAGC TAAGGATTGT CTCACAACGC ATGATAAGGA
    361 CTTCGCTGCC CGACCAACTT CTATGGCTGG TGAAAGCATC GGGTACAAGT ATGCGAGGTT
    421 TACTTATGCT AATTTTGGTC CTTATTATAA CCAAGTGCGC AAACTAGCCC TACAACATGT
    481 ACTCTCGAGT ACTAAACTCG AGAAAATGAA ACACATACGT GTTTCTGAAT GGAAACTAG
    541 CATCAAAGAA TTATATTCTT TGACGCTGGG CAAAAACAAC ATGCAAAAAG TGAATATAAG
    601 TAAATGGTTT GAACAATTGA CTTTAAACAT AATCGTGAAG ACAATTGTG GCAAGAGATA
    661 TAGCAACATA GAGGAGGATG AAGAGGCACA ACGTTTCAGA AAGGCATTTA AGGGCATCAT
    721 GTTTGTTGTA GGGCAAATTG TTTTATATGA CGCAATTCCA TTCCCATTGT TCAAATACTT
    781 TGATTTCCAA GGTCATATAC AATTGATGAA CAAAATTTAT AAAGACTTAG ATTCTATTCT
    841 TCAAGGATGG TTGGATGATC ATATGATGAA CAAGGATGTA AACAATAAGG ATCAAGATGC
    901 CATAGATGCC ATGCTTAAGG TAACACAACT TAATGAATTC AAAGCCTATG GTTTTTCTCA
    961 GGCCACTGTG ATCAAGTCGA CAGTCTTGAG TTTGATCTTA GATGGAAATG ACACAACCGC
   1021 TGTTCATTTG ATATGGGTAA TGTCCTTATT ACTGAACAAT CCACATGTTA TGAAACAAGG
   1081 CCAAGAAGAG ATAGACATGA AAGTGGGTAA AGAGAGGTGG ATTGAAGATA CTGACATAAA
   1141 AAATTTAGTG TACCTTCAGG CTATCGTTAA AGAGACATTG CGCTTGTATC CACCTGTTCC
   1201 TTTTCTTTTA CCACACGAAG CAGTGCAAGA TTGTAAAGTG ACTGGTTACC ACATTCCTAA
   1261 AGGTACTCGT CTATATATCA ATGCGTGGAA AGTACATCGC GATTCTGAAA TTTGGTCAGA
   1321 GCCCGAAAAG TTTATGCCCA ATAGATTCTT GACTAGCAAA GCAAATATAG ATGCTCGCGG
   1381 TCAAAATTTT GAATTTATAC CGTTTGGTTC TGGGAGACGG TCATGTCCAG GGTTAGGTTT
   1441 TGCGACTTTA GTGACACATC TGACTTTTGG TCGCTTGCTT CAAGGTTTTG ATTTTAGTAA
   1501 GCCATCAAAC ACGCCAATTG ACATGACAGA AGGCGTAGGC GTTACTTTGC CTAAGGTTAA
   1561 TCAAGTTGAA GTTCTAATTA CCCCTCGTTT ACCTTCTAAG CTTTATTTAT TTTGAAAGTG
   1621 CAAATCATCA ATCATGGGTT GAGTAATTAG TGATACT

SEQ. ID. NO. 270
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     61 FPRILGALAD KYGPVFTLRI GMYPYLIVNN WEAAKDCLTT HDKDFAARPT SMAGESIGYK
    121 YARFTYANFG PYYNQVRKLA LQHVLSSTKL EKMKHIRVSE LETSIKELYS LTLGKNNMQK
    181 VNISKWFEQL TLNIIVKTIC GKRYSNIEED EEAQRFRKAF KGIMFVVGQI VLYDAIPFPL
    241 FKYFDFQGHI QLMNKIYKDL DSILQGWLDD HMMNKDVNNK DQDAIDAMLK VTQLNEFKAY
    301 GFSQATVIKS TVLSLILDGN DTTAVHLIWV MSLLLNNPHV MKQGQEEIDM KVGKERWIED
    361 TDIKNLVYLQ AIVKETLRLY PPVPFLLPHE AVQDCKVTGY HIPKGTRLYI NAWKVHRDSE
    421 IWSEPEKFMP NRFLTSKANI DARGQNFEFI PFGSGRRSCP GLGFATLVTH LTFGRLLQGF
    481 DFSKPSNTPI DMTEGVGVTL PKVNQVEVLI TPRLPSKLYL F

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NAME        D283-AC1
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 271
     1 AGAGAGTGAA AATGGACGCA CTACTTCAAA TGACAGTAAC AGCATCTTGT GCTGCCATAG
    61 TAATTACTCT GCTGGTGTGT ATATGGAGAG TGCTGAACTG GATTTGGTTC AGACCAAAGA
   121 AATTGGAGTT GTTGTTGAGA AAACAAGGTT TGGAAGGAAA TTCTTACAAG GTTTTGTATG
   181 GGGACATGAA AGAGTTTTCT GGGATGATTA AGGAAGCATA CTCAAAGCCT ATGAGTCTAT
   241 CTGATGATGT AGCACCAAGA CTGATGCCTT TCTTTCTTGA AACCATCAAA AAATATGGAA
   301 AAAGATCCTT TATATGGTTT GGTCCAAGAC CACTAGTATT GATTATGGAT CCTGAGCTTA
   361 TAAAGGAAGT ACTCTCAAAA ATCCATCTGT ATCAAAAGCC-TGGTGGAAAT CCATTAGCAA
   421 CACTATTGGT ACAAGGAATA GCAACCTATG AGGAAGACAA ATGGGCCAAA CATAGAAAAA
   481 TCATCAATCC CGCTTTCCAT CTAGAGAAGC TAAAGCTTAT GCTTCCAGCA TTTCGCTTAA
   541 GCTGTAGTGA GATGCTGAGC AAATGGGAAG ACATTGTTTC AGCTGATAGC TCACATGAGA
   601 TAGATGTATG GTCTCACCTT GAGCAATTGA CTTGCGATGT GATCTCTCGG ACAGCTTTTG
   661 GCAGTAGTTA TGAAGAAGGT AGAAAGATTT TTGAACTTCA AAAGGAACAA GCTCAGTATC
   721 TTGTGGAAGT TTTCCGCTCC GTTTATATCC CAGGAAGGAG ATTTTTGCCA ACAAAGAGGA
   781 ATAGAAGAAT GAAGGAAATA AAAAAGGATG TCCGGGCATC AATTAAAGGT ATTATTGATA
   841 AAAGATTGAA GGCAATGAAA GCAGGGGACA CCAATAATGA GGATCTATTG GGTATATTAC
   901 TGGAATCGaa TATTAAAGAA ATTGAACAGC ACGGAAACAA GGATTTTGGA ATGAGCATTG
   961 AAGAAGTCAT TGAAGAATGC AAGTTATTCT ATTTTGCTGG CCAAGAAACT ACATCAGTGT
  1021 TACTCCTATG GTCTCTAGTG TTGTTGAGCA GGTATCAAGA TTGGCAGGCA CGGGCCAGAG
  1081 AAGAAATCTT GCAAGTCTTT GGCAGTCGAA AACCAGATTT TGACGGATTA AATCATCTAA
  1141 AAATTGTGAC AATGATCTTG TACGAGTCTT TAAGGCTGTA TCCCTCACTA ATAACACTTA
  1201 CCCGCCGGTG TAATGAAGAC ATTGTATTAG GAGAACTATC TCTACCAGCT GGTGTTCTAG
  1261 TCTCTTTGCC ATTGATTTTG TTGCATCATG ATGAAGAGAT ATGGGGTGAA GATGCAAAGG
  1321 AGTTCAAACC AGAGAGATTT AGAGAAGGAA TATCAAGTGC AACAAAGGGT CAACTCACAT
  1381 ATTTTCCATT TAGCTGGGGT CCTAGAATAT GTATTGGACA AAATTTTGCC ATGTTAGAAG
  1441 CAAAGATGGC TCTGTCTATG ATCCTGCAAC GCTTCTCTTT TGAACTGTCT CCGTCTTATG
  1501 CACATGCCCC TCGGTCCATA ATAACCGTTC AGCCTCAGTA TGGTGCTCCA CTTATTTTCC
  1561 ACAAACTATA ATTTTGGTAC TTCTACTAAT ATTTTAGGGT TTATTCAGAC TCAAAAAAAA

SEQ. ID. NO. 272
     1 MTVTASCAAI VITLLVCIWR VLNWIWFRPK KLELLLRKQG LEGNSYKVLY GDMKEFSGMI
    61 KEAYSKPMSL SDDVAPRLMP FFLETIKKYG KRSFIWFGPR PLVLIMDPEL IKEVLSKIHL
   121 YQKPGGNPLA TLLVQGIATY EEDKWAKHRK IINPAFHLEK LKLMLPAFRL SCSEMLSKWE
   181 DIVSADSSHE IDVWSHLEQL TCDVISRTAF GSSYEEGRKI FELQKEQAQY LVEVFRSVYI
   241 PGRRFLPTKR NRRMKEIKKD VRASIKGIID KRLKAMKAGD TNNEDLLGIL LESNIKEIEQ
   301 HGNKDFGMSI EEVIEECKLF YFAGQETTSV LLLWSLVLLS RYQDWQARAR EEILQVFGSR
   361 KPDFDGLNHL KIVTMILYES LRLYPSLITL TRRCNEDIVL GELSLPAGVL VSLPLILLHH
   421 DEEIWGEDAK EFKPERFREG ISSATKGQLT YFPFSWGPRI CIGQNFAMLE AKMALSMILQ
   481 RFSFELSPSY AHAPRSIITV QPQYGAPLIF HKL
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NAME   D244-AB6
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 273
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      61 TATTTCTTTC CATTTTCAAG CTCTTTTAGG GCTTTTAGCC TTTGTGTTCT TGTCTATTAT
     121 CTTATGGAGA AGAACACTCA CTTCAAGAAA ATTAGCCCCT GAAATCCCAG GGGCATGGCC
     181 TATTATAGGC CATCTTCGTC AGCTGAGTGG TACTGATAAG AATATCCCAT TTCCCCGAAT
     241 ATTGGGCGCT TTGGCAGATA AATATGGACC TGTCTTCACA CTGAGAATAG GGATGTACCC
     301 CTATTTGATT GTCAACAATT GGGAAGCAGC TAAGGATTGT CTCACAACGC ATGATAAGGA
     361 CTTggCTGCC CGACCAACTT CTATGGCTGG TGAAAGCATC GGGTACAAGT ATGCGAGGTT
     421 TACTTATGCT AATTTTGGTC CTTATTATAA CCAAGTGCGC AAACTAGCCC TACAACATGT
     481 ACTCTCGAGT ACTAAACTCG AGAAAATGAA ACACATACGT GTTTCTGAAT TGGAAACTAG
     541 CATCAAAGAA TTATATTCTT TGACGCTGGG CAAAAACAAC ATGCAAAAAG TGAATATAAG
     601 TAAATGGTTT GAACAATTGA CTTTAAACAT AATCGTGAAG ACAATTTGTG GCAAGAGATA
     661 TAGCAACATA GAGGAGGATG AAGAGGCACA ACGTTTCAGA AAGGCATTTA AGGGCATCAT
     721 GTTTGTTGTA GGGCAAATTG TTTTATATGA CGCAATTCCA TTCCCATTGT TCAAATACTT
     781 TGATTTCCAA GGTCATATAC AATTGATGAA CAAAATTTAT AAAGACTTAG ATTCTATTCT
     841 TCAAGGATGG TTGGATGATC ATATGATGAA CAAGGATGTA AACAATAAGG ATCAAGATGC
     901 CATAGATGCC ATGCTTAAGG TAACACAACT TAATGAATTC AAAGCCTATG GTTTTTCTCA
     961 GGCCACTGTG ATCAAGTCGA CAGTCTTGAG TTTGATCTTA GATGGAAATG ACACAACCGC
    1021 TGTTCATTTG ATATGGGTAA TGTCCTTATT ACTGAACAAT CCACATGTTA TGAAACAAGG
    1081 CCAAGAAGAG ATAGACATGA AAGTGGGTAA AGAGAGGTGG ATTGAAGATA CTGACATAAA
    1141 AAATTTAGTG TACCTTCAGG CTATCGTTAA AGAGACATTG CGCTTGTATC CACCTGTTCC
    1201 TTTTCTTTTA CCACACGAGG CAGTGCAAGA TTGTAAAGTG ACTGGTTACC ACATTCCTAA
    1261 AGGTACTCGT CTATATATCA ATGCGTGGAA AGTACATCGC GATCCTGAAA TTTGGTCAGA
    1321 GCCCGAAAAG TTTATGCCCA ATAGATTCTT GACTAGCAAA GCAAATATAG ATGCTCGCGG
    1381 TCAAAATTTT GAATTTATAC CGTTTGGTTC TGGGAGACGG TCATGTCCAG GGATAGGTTT
    1441 TGCGACTTTA GTGACACATC TGACTTTTGG TCGCTTGCTT CAAGGTTTTG ATTTTAGTAA
    1501 GCCATCAAAC ACGCCAATTG ACATGACAGA AGGCGTAGGC GTTACTTTGC CTAAGGTTAA
    1561 TCAAGTTGAA GTTCTAATTA CCCCTCGTTT ACCTTCTAAG CTTTATTTAT TTTGAAGGTG
    1621 CAAATCATCA ATCATGGCTT GAGTAATTAG TTATACTTTA ATATGTTTCT C
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SEQ. ID. NO. 274
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       1 MDYHISFHFQ ALLGLLAFVF LSIILWRRTL TSRKLAPEIP GAWPIIGHLR QLSGTDKNIP
      61 FPRILGALAD KYGPVFTLRI GMYPYLIVNN WEAAKDCLTT HDKDLAARPT SMAGESIGYK
     121 YARFTYANFG PYYNQVRKLA LQHVLSSTKL EKMKHIRVSE LETSIKELYS LTLGKNNMQK
     181 VNISKWFEQL TLNIIVKTIC GKRYSNIEED EEAQRFRKAF KGIMFVVGQI VLYDAIPFPL
     241 FKYFDFQGHI QLMNKIYKDL DSILQGWLDD HMMNKDVNNK DQDAIDAMLK VTQLNEFKAY
     301 GFSQATVIKS TVLSLILDGN DTTAVHLIWV MSLLLNNPHV MKQGQEEIDM KVGKERWIED
     361 TDIKNLVYLQ AIVKETLRLY PPVPFLLPHE AVQDCKVTGY HIPKGTRLYI NAWKVHRDPE
     421 IWSEPEKFMP NRFLTSKANI DARGQNFEFI PFGSGRRSCP GIGFATLVTH LTFGRLLQGF
     481 DFSKPSNTPI DMTEGVGVTL PKVNQVEVLI TPRLPSKLYL F
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NAME          D205-BE9
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 275
      1 TTTGATTCAA CCATGGAGAA CCAATACTCC TACTCATTCT CTTCCTACTT CTACTTAGCT
     61 ATAGTACTGT TTCTTCTTCC AATTTTGGTC AAATATTTCT TCCATCGGAG AAGAAATTTA
    121 CCTCCAAGTC CATTTTCTCT TCCAATAATT GGTCACCTTT ACCTTCTCAA GAAAACTCTC
    181 CATCTCACTC TAACATCCTT ATCAGCTAAA TATGGTCCTG TTTTATACCT CAAATTGGGC
    241 TCTATGCCTG TGATTGTTGT GTCCTCACCA TCTGCTGTTG AAGAATGTTT AACCAAGAAT
    301 GATATCATAT TCGCAAATAG GCCCAAGACC GTGGCTGGTG ACAAGTTTAC CTACAATTAT
    361 ACTGTTTATG TTTGGGCACC CTATGGCCAA CTTTGGAGAA TTCTTCGCCG ATTAACTGTC
    421 GTTGAACTCT TCTCTTCACA TAGCCTACAG AAAACTTCTA TCCTTAGAGA TCAAGAAGTT
    481 GCAATATTTA TCCGTTCGTT ATACAAATTC TCAAAGGATA GTAGCAAAAA AGTCGATTTG
    541 ACCAACTGGT CTTTTACTTT GGTTTTCAAT CTTATGACCA AAATTATTGC TGGGAGACAT
    601 ATTGTGAAGG AGGAAGATGC TGGCAAGGAA AAGGGCATTG AAATTATTGA AAAACTTAGA
    661 GGGACTTTCT TAGTAACTAC ATCATTCTTG AATATGTGTG ATTTCTTGCC AGTATTCAGG
    721 TGGGTTGGTT ACAAAGGGCA GGAGAAGAAG ATGGCCTCAA TTCACAATAG AAGAAATGAA
    781 TTCTTGAACA GCTTGCTTGA TGAATTTCGA CACAAGAAAA GTAGTGCTTC ACAATCTAAC
    841 ACAACTGTTG AAACATGGA GAAGAAAACC ACACTGATTG AAAAGCTCTT GTCTCTTCAA
    901 GAATCAGAGC CTGAATTCTA CACTGATGAT ATCATCAAAA GTATTATGCT GGTAGTTTTT
    961 GTTGCAGGAA CAGAGACCTC ATCAACAACC ATCCAATGGG TAATGAGGCT TCTTGTAGCT
   1021 CACCCTGAGG CATTGTATAA GCTACGAGCT GACATTGACA GTAAAGTTGG GAATAAGCGC
   1081 TTGCTGAATG AATCAGACCT CAACAAGCTT CCGTATTTGC ATTGTGTTGT TAATGAGACA
   1141 ATGAGATTAT ACACTCCGAT ACCACTTTTA TTGCCTCATT ATTCAACTAA AGATTGTATT
   1201 GTGGAAGGAT ATGATGTACC AAAACATACA ATGTTGTTTG TCAACGCTTG GGCCATTCAC
   1261 AGGGATCCCA AGGTATGGGA GGAGCCTGAC AAGTTCAAGC CAGAGAGATT TGAGGCAACA
   1321 GAAGGGGAAA CAGAAAGGTT CAATTACAAG CTTGTACCAT TTGGAATGGG GAGAAGAGCG
   1381 TGCCCTGGAG CTGATATGGG GTTGCGAGCA GTTTCTTTGG CATTAGGTGC ACTTATTCAA
   1441 TGCTTTGACT GGCAAATTGA GGAAGCGGAA AGCTTGGAGG AAAGCTATAA TTCTAGAATG
   1501 ACTATGCAGA ACAAGCCTTT GAAGGTTGTC TGCACTCCAC GCGAAGATCT GGGCCAGCTT
   1561 CTATCCCAAC TCTAAGGCAA TTTATCAATG CCAAACGTAA TCTTCATCTA CCACTATG

SEQ. ID. NO. 276
      1 MENQYSYSFS SYFYLAIVLF LLPILVKYFF HRRRNLPPSP FSLPIIGHLY LLKKTLHLTL
     61 TSLSAKYGPV LYLKLGSMPV IVVSSPSAVE ECLTKNDIIF ANRPKTVAGD KFTYNYTVYV
    121 WAPYGQLWRI LRRLTVVELF SSHSLQKTSI LRDQEVAIFI RSLYKFSKDS SKKVDLTNWS
    181 FTLVFNLMTK IIAGRHIVKE EDAGKEKGIE IIEKLRGTFL VTTSFLNMCD FLPVFRWVGY
    241 KGQEKKMASI HNRRNEFLNS LLDEFRHKKS SASQSNTTVG NMEKKTTLIE KLLSLQESEP
    301 EFYTDDIIKS IMLVVFVAGT ETSSTTIQWV MRLLVAHPEA LYKLRADIDS KVGNKRLLNE
    361 SDLNKLPYLH CVVNETMRLY TPIPLLLPHY STKDCIVEGY DVPKHTMLFV NAWAIHRDPK
    421 VWEEPDKFKP ERFEATEGET ERFNYKLVPF GMGRRACPGA DMGLRAVSLA LGALIQCFDW
    481 QIEEAESLEE SYNSRMTMQN KPLKVVCTPR EDLGQLLSQL
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NAME          D136-AF4
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 277
      1 CCTTTTTAAG ATGTATTTAA GATTTAAGAT TTAAGATGAA GCAACTGAGG TAAGTCCTTT
     61 CAAGGAGTAG TTGTCACTTC TGAGAATGGA GATGATGTAC AGCATAATAG CAGCAGCCAG
    121 TATTGCAATT ATCTTGGTAT ATACATGGAA AGTGTTGAAT TGGGCTTGGT TTGGGCCGAA
    181 GAAAATGGAG AAATGCTTAA GACAGAGGGG TCTCAAGGGA AATCCTTATA AGCTACTCTA
    241 TGGAGATCTA AACGAACTGA CAAAAAGCAT AATAGAAGCC AAGTCTAAGC CCATCAATTT
    301 CTCTGATGAT ATTGCTCAAA GGCTCATCCC TTTTTTTCTT GACGCCATCA ACAAAAATGG
    361 TAAAAACTCC TTCGTCTGGC TTGGACCGTA TCCAATAGTG TTGATCACGG ATCCTGAGCA
    421 TTTAAAGGAG ATTTTCACAA AGAATTATGT GTATCAAAAG CAAACTCATC CCAATCCATA
    481 CGCCAAGCTA TTAGCTCACG GTCTTGTCAG CCTTGAGGAA GACAAATGGG CCAAACACAG
    541 AAAAATCATT AGTCCTGCCT TCCATGTCGA GAAGCTAAAG CATATGCTGC CTGCATTTTA
    601 TCTGAGTTGT AGTGAAATGA TAAGCAAATG GGAGGAGGTT GTTCCAAAAG AAACATCATT
    661 CGAGCTCGAT GTATGGCCAG ACCTTCAAAT AATGACCAGT GAAGTCATTT CTCGCACTGC
    721 ATTTGGGAGT AGCTATGAAG AAGGAAGAAT AGTATTTGAA CTTCAGAAAG AACAAGCTGA
    781 GTATGTAATG GACATAGGAC GTTCAATTTA TATACCAGGA TCAAGGTTCT TGCCTACTAA
    841 AAGGAACAAA AGAATGCTGG AAATTGAAAA GCAAGTGCAA ACAACAATTA GGCGTATCAT
    901 CGACAAAAGA TTGAAGGCAA TGGAAGAAGG GGAGACTAGT AAAGATGACT TATTAGGCAT
    961 ATTACTTGAA TCCAATTTGA AAGAAATTGA ACTTCATGGA AGAAATGACT TGGGAATAAC
   1021 AACGTCAGAA GTGATTGAAG AGTGCAAGTT ATTCTATTTT GCCGGCCAAG AGACCACTTC
   1081 AGTGTTGCTT GTTTGGACAA TGATTTTGTT GTGCTTACAT CCAGAGTGGC AAGTACGTGC
   1141 CAGAAAGGAA GTGTTGCAGA TCTTTGGAAA TGATAAACCA GATTTGGAAG GACTAAGTCG
   1201 CTTGAAAATT GTAACAATGA TCTTGTACGA GACGTTACGC CTATTCCCCC CATTACCAGC
   1261 ATTTGGTAGA AGGAACAAAG AAGAAGTCAA ATTAGGGGAG CTACATCTAC CGGCTGGAGT
   1321 GTTACTCGTT ATACCAGCAA TCTTAGTACA TTATGATAAG GAAATATGGG GTGAAGATGC
   1381 AAAGGAATTC AAACCAGAAA GATTCAGTGA AGGAGTGTCA AAGGCAACAA ATGGACAAGT
   1441 CTCATTTATA CCATTTAGCT GGGGACCTCG TGTTTGCATT GGACAAAACT TCGCAATGAT
   1501 GGAAGCAAAA ATGGCAGTAA CTATGATACT ACAAAAATTC TCCTTTGAAC TATCCCCTTC
   1561 TTATACACAT GCTCCATTTG CAATTGTGAC TATTCATCCC CAGTATGGTG CTCCTCTGCT
   1621 TATGCGCAGA CTTTAAAACA TATGTTGCTG ATATTTAAGA TCAGTGGCGT TTTATT
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SEQ. ID. NO. 278
      1 MEMMYSIIAA ASIAIILVYT WKVLNWAWFG PKKMEKCLRQ RGLKGNPYKL LYGDLNELTK
     61 SIIEAKSKPI NFSDDIAQRL IPFFLDAINK NGKNSFVWLG PYPIVLITDP EHLKEIFTKN
    121 YVYQKQTHPN PYAKLLAHGL VSLEEDKWAK HRKIISPAFH VEKLKHMLPA FYLSCSEMIS
    181 KWEEVVPKET SFELDVWPDL QIMTSEVISR TAFGSSYEEG RIVFELQKEQ AEYVMDIGRS
    241 IYIPGSRFLP TKRNKRMLEI EKQVQTTIRR IIDKRLKAME EGETSKDDLL GILLESNLKE
    301 IELHGRNDLG ITTSEVIEEC KLFYFAGQET TSVLLVWTMI LLCLHPEWQV RARKEVLQIF
    361 GNDKPDLEGL SRLKIVTMIL YETLRLFPPL PAFGRRNKEE VKLGELHLPA GVLLVIPAIL
    421 VHYDKEIWGE DAKEFKPERF SEGVSKATNG QVSFIPFSWG PRVCIGQNFA MMEAKMAVTM
    481 ILQKFSFELS PSYTHAPFAI VTIHPQYGAP LLMRRL
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NAME   D101-BA2
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 279

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   1 CTAAATTTCA TATACCTTTA GTACTCTTGA AATTTTCAAA TAATGGTTTA TCTTCTTTCT
  61 CCCATAGAAG CCATTGTAGG ATTTGTAACC TTTTCATTTC TATTCTACTT TCTATGGACC
 121 AAAAAACAAT CAAAAATCTT AAACCCACTA CCTCCAAAAA TCCCAGGTGG ATGGCCAGTA
 181 ATCGGCCATC TCTTTTATTT CAAGAACAAT GGCGATGAAG ATCGCCATTT TTCTCAAAAA
 241 CTCGGTGACT TAGCTGACAA ATATGGTCCC GTCTTCACTT TCCGGTTAGG GTTTCGCCGT
 301 TTCTTGGCGG TGAGTAGTTA TGAAGCTATG AAAGAATGCT TCACTACCAA TGATATCCAT
 361 TTCGCCGATC GGCCATCTTT ACTCTACGGA GAATACCTTT GCTATAATAA TGCCATGCTT
 421 GCTGTTGCCA AATATGGCCC TTACTGGAAA AAAAATCGAA AGTTAGTCAA TCAAGAAGTT
 481 CTCTCCGTTA GTCGGCTCGA AAAATTCAAA CATGTTAGAT TTTCTATAAT TCAGAAAAAT
 541 ATTAAACAAT TGTATAATTG TGATTCACCA ATGGTGAAGA TAAACCTTAG TGATTGGATA
 601 GATAAATTGA CATTCGACAT CATTTTGAAA ATGGTTGTTG GGAAGAACTA TAATAATGGA
 661 CATGGAGAAA TACTCAAAGT TGCTTTTCAG AAATTCATGG TTCAAGCTAT GGAGATGGAG
 721 CTCTATGATG TTTTTCACAT TCCATTTTTC AAGTGGTTGG ATCTTACAGG GAATATTAAG
 781 GCTATGAAAC AAACTTTCAA AGACATTGAT AATATTATCC AAGGTTGGTT AGATGAGCAC
 841 ATTAAGAAGA GAGAAACAAA GGATGTTGGA GGTGAAAACG AACAAGATTT TATAGATGTG
 901 GTGCTTTCCA AGATGAGCGA CGAACATCTT GGCGAGGGTT ACTCTCATGA CACAACCATC
 961 AAAGCAACTG TATTCACTTT GGTCTTGGAT GCAACAGACA CACTTGCACT TCATATAAAG
1021 TGGGTAATGG CGTTAATGAT AAACAATAGA CATGTCATGA AGAAAGCACA AGAAGAGATG
1081 GACACAATTG TTGGTAGAGA TAGATGGGTA GAAGAGAGTG ATATCAAGAA TTTGGTGTAT
1141 CTCCAAGCAA TTGTTAAAGA AGTATTACGA TTACATCCAC CTGCACCTTT GTCAGTGCAA
1201 CACCTATCTG TGGAAGATTG TGTTGTCAAT GGGTACCATA TTCCTAAGGG GACTGCACTA
1261 CTTACCAATA TTATGAAACT ACAGCGAGAT CCTCAAACAT GGCCAAATCC TGATAAATTC
1321 GATCCAGAGA GATTCCTGAC GACTCATGCT ACTATTGACT ACCGCGGGCA GCACTATGAG
1381 TTGATCCCCT TTGGTACGGG GAGACGAGCT TGTCCCGCGA TGAATTATTC ATTGCAAGTG
1441 GAACACCTTT CAATTGCTCA TATGATCCAA GGTTTCAGTT TTGCAACTAC GACCAATGAG
1501 CCTTTGGATA TGAAACAAGG TGTGGGTTTA ACTTTACCAA AGAAGACTGA TGTTGAAGTT
1561 CTAATTACCC CTCGTTT
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SEQ. ID. NO. 280

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   1 MVYLLSPIEA IVGFVTFSFL FYFLWTKKQS KILNPLPPKI PGGWPVIGHL FYFKNNGDED
  61 RHFSQKLGDL ADKYGPVFTF RLGFRRFLAV SSYEAMKECF TTNDIHFADR PSLLYGEYLC
 121 YNNAMLAVAK YGPYWKKNRK LVNQEVLSVS RLEKFKHVRF SIIQKNIKQL YNCDSPMVKI
 181 NLSDWIDKLT FDIILKMVVG KNYNNGHGEI LKVAFQKFMV QAMEMELYDV FHIPFFKWLD
 241 LTGNIKAMKQ TFKDIDNIIQ GWLDEHIKKR ETKDVGGENE QDFIDVVLSK MSDEHLGEGY
 301 SHDTTIKATV FTLVLDATDT LALHIKWVMA LMINNKHVMK KAQEEMDTIV GRDRWVEESD
 361 IKNLVYLQAI VKEVLRLHPP APLSVQHLSV EDCVVNGYHI PKGTALLTNI MKLQRDPQTW
 421 PNPDKFDPER FLTTHATIDY RGQHYELIPF GTGRRACPAM NYSLQVEHLS IAHMIQGFSF
 481 ATTTNEPLDM KQGVGLTLPK KTDVEVLITP R
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NAME   D130-AA1
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 281
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   1 CTTTTTCTCC CCAAAAAAGA GCTCATTTCC CTTGTCCCCA AAAATGGATC TTCTCTTACT
  61 AGAGAAGACC TTAATTGGTC TCTTCTTTGC CATTTTAATC GCTGTAATTG TCTCTAGACT
 121 TCGTTCAAAG CGTTTTAAGC TTCCCCCAGG ACCAATCCCA GTACCAGTTT TTGGTAATTG
 181 GCTTCAAGTT GGTGATGATT TAAACCACAG AAATCTTACT GATTTTGCCA AAAAATTTGG
 241 TGATCTTTTC TTGTTAAGAA TGGGCCAGCG TAATTTAGTT GTTGTGTCAT CTCCTGAATT
 301 AGCTAAAGAA GTTTTACACA CACAAGGTGT TGAATTTGGT TCAAGAACAA GAAATGTTGT
 361 ATTTGATATT TTTACTGGAA AAGGTCAAGA TATGGTTTTT ACTGTATATG GTGAACACTG
 421 GAGAAAAATG AGGAGAATTA TGACTGTACC ATTTTTTACT AATAAAGTTG TGCAGCAATA
 481 TAGAGGGGGG TGGGAGTTTG AAGTGGCAAG TGTAATTGAG GATGTGAAGA AAAATCCTGA
 541 ATCTGCTACT AATGGGATTG TATNAAGGAG GAGATTACAA TTGATGATGT ATAATAATAT
 601 GTTTAGGATT ATGTTTGATA GGAGATTTGA GAGTGAAGAT GATCCTTTGT TTGTTAAGCT
 661 TAAGGCTTTG AATGGTGAAA GGAGTAGATT GGCTCAGAGT TTTGAGTATA ATTATGGTGA
 721 TTTTATTCCC ATTTTGAGGC CTTTTTTGAG AGGTTATTTG AAGATCTGTA AAGAAGTTAA
 781 GGAGAAGAGG CTGCAGCTTT TCAAAGATTA CTTTGTTGAT GAAAGAAAGA AGCTTTCAAA
 841 TACCAAGAGC TTGGACAGCA ATGCTCTGAA ATGTGCGATT GATCACATTC TTGAGGCTCA
 901 ACAGAAGGGG GAGATCAATG AGGACAACGT TCTTTACATT GTTGAAAACA TCAATGTTGC
 961 TGCTATAGAA ACCACATTAT GGTCAATTGA GTGGGGTATC GCCGAGTTAG TCAACCACCC
1021 TCACATCCAA AAGAAACTCC GCGACGAGAT TGACACAGTT CTTGGCCCAG GAGTGCAAGT
1081 GACTGAACCA GACACCCACA AGCTTCCATA CCTTCAGGCT GTGATCAAGG AGACGCTTCG
1141 TCTCCGTATG GCAATTCCTC TATTAGTCCC ACACATGAAC CTTCACGATG CAAAGCTTGG
1201 CGGGTTTGAT ATTCCAGCAG AGAGCAAAAT CTTGGTTAAC GCTTGGTGGC TAGCTAACAA
1261 CCCGGCTCAT TGGAAGAAAC CCGAAGAGTT CAGACCCGAG AGGTTCTTCG AAGAGGAGAA
1321 GCACGTTGAG GCCAATGGCA ATGACTTCAG ATATCTTCCG TTTGGCGTTG GTAGGAGGAG
1381 TTGCCCTGGA ACTATACTTG CATTGCCAAT TCTTGGCATT ACTTTGGGAC GTTT
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SEQ. ID. NO. 282
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   1 MDLLLLEKTL IGLFFAILIA VIVSRLRSKR FKLPPGPIPV PVFGNWLQVG DDLNHRNLTD
  61 FAKKFGDLFL LRMGQRNLVV VSSPELAKEV LHTQGVEFGS RTRNVVFDIF TGKGQDMVFT
 121 VYGEHWRKMR RIMTVPFFTN KVVQQYRGGW EFEVASVIED VKKNPESATN GIVLRRRLQL
 181 MMYNNMFRIM FDRRFESEDD PLFVKLKALN GERSRLAQSF EYNYGDFIPI LRPFLRGYLK
 241 ICKEVKEKRL QLFKDYFVDE RKKLSNTKSL DSNALKCAID HILEAQQKGE INEDNVLYIV
 301 ENINVAAIET TLWSIEWGIA ELVNHPHIQK KLRDEIDTVL GPGVQVTEPD THKLPYLQAV
 361 IKETLRLRMA IPLLVPHMNL HDAKLGGFDI PAESKILVNA WWLANNPAHW KKPEEFRPER
 421 FFEEEKHVEA NGNDFRYLPF GVGRRSCPGT ILALPILGIT LGR
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NAME          D136-AD5
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 283
        1 CCAAATTAGA GCAAGAAATT AACAAGTCTA GTTACCTTCT CCCTTTTTAA GAGTATTTAA
       61 GATTTAAGAT TTAAGATGAA GCAACTGAGG TAAGTCCTTT CAAGGAGTAG TTGTCACTTC
      121 TGAGAATGGA GATGATGTAC AGCATAATAG CAGCAGCCAG TATTGCAATT ATCTTGGTAT
      181 ATACATGGAA AGTGTTGAAT TGGGCTTGGT TTGGGCCAAA GAAAATGGAG AAATGCTTAA
      241 GACAGAGGGG TCTCAAGGGA AATCCTTATA AGCTACTCTA TGGAGATCTA AACGAACTGA
      301 CAAAAAGCAT AATAGAAGCC AAGTCTAAGC CCATCAATTT CTCTGATGAT ATTGCTCAAA
      361 GGCTCATCCC TTTTTTTCTT GACGCCATCA ACAAAAATGG TAAAAACTCC TTCGTCTGGC
      421 TTGGACCGTA TCCAATAGTG TTGATCACGG ATCCTGAGCA TTTAAAGGAG ATTTTCACAA
      481 AGAATTATGT GTATCAAAAG CAAACTCATC CCAATCCATA CGCCAAGCTA TTAGCTCACG
      541 GTCTTGTCAG CCTTGAGGAA GACAAATGGG CCAAACACAG AAAAATCATT AGTCCTGCCT
      601 TCCATGTCGA GAAGCTAAAG CATATGCTGC CTGCATTTTA TCTGAGTTGT AGTGAAATGA
      661 TAAGCAAATG GGAGGAGGTT GTTCCAAAAG AAACATCATT CGAGCTCGAT GTATGGCCAG
      721 ACCTTCAAAT AATGACCAGT GAAGTCATTT CTCGCACTGC ATTTGGGAGT AGCTATGAAG
      781 AAGGAAGAAT AGTATTTGAA CTTCAGAAAG AACAAGCTGA GTATGTAATG ACATAGGAC
      841 GTTCAATTTA TATACCAGGA TCAAGGTTCT TGCCTACTAA AAGGAACAAA AGAATGCTGG
      901 AAATTGAAAA GCAAGTGCAA ACAACAATTA GGCGTATCAT CGACAAAAGA TTGAAGGCAA
      961 TGGAAGAAGG GGAGACTAGT AAAGATGACT TATTAGGCAT ATTACTTGAA TCCAATTTGA
     1021 AAGAAATTGA ACTTCATGGA AGAAATGACT TGGGAATAAC AACATCAGAA GTGATTGAAG
     1081 AGTGCAAGTT AATCTATTTT GCCGGCCAAG AGACCACTTC AGTGTTGCTT GTTTGGACAA
     1141 TGATTTTGTT GTGCTTACAT CCAGAGTGGC AAGTACGTGC CAGAAAGGAA GTGTTGCAGA
     1201 CCTTTGGAAA TGATAAACCA GATTTGGAAG GACTAAGTCG CTTGAAAATT GTAACAATGA
     1261 TCTTGTACGA GACGTTACGC CTATTCCCCC CATTACCAGC ATTTGGTAGA AGGAACAAAG
     1321 AAGAAGTCAA ATTAGGGGAG CTACATCTAC CGGCTGGAGT GTTACTCGTT ATACCAGCAA
     1381 TCTTAGTACA TTATGATAAG GAAATATGGG GTGAAGATGC AAAGGAATTC AAACCAGAAA
     1441 GATTCAGTGA AGGAGTGTCA AAGGCAACAA ATGGACAAGT CTCATTTATA CCATTTAGCT
     1501 AGGGACCTCG TGTTTGCATT GGACAAAACT TCGCAATGAT GGAAGCAAAA ATGGCAGTAA
     1561 CTATGATACT ACAAAAATTC TCCTTTGAAC TATCCCCTTC TTATACACAT GCTCCATTTG
     1621 CAATTGTGAC TATTCATCCC CAGTATGGTG CTCCTCTGCT TATGCGCAGA CTTTAAAACA
     1681 TATGTTGCTG ATATTTAAGA TCAGTGGCGT TTTATTCTCC ATG
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SEQ. ID. NO. 284
        1 MEMMYSIIAA ASIAIILVYT WKVLNWAWFG PKKMEKCLRQ RGLKGNPYKL LYGDLNELTK
       61 SIIEAKSKPI NFSDDIAQRL IPFFLDAINK NGKNSFVWLG PYPIVLITDP EHLKEIFTKN
      121 YVYQKQTHPN PYAKLLAHGL VSLEEDKWAK HRKIISPAFH VEKLKHMLPA FYLSCSEMIS
      181 KWEEVVPKET SFELDVWPDL QIMTSEVISR TAFGSSYEEG RIVFELQKEQ AEYVMDIGRS
      241 IYIPGSRFLP TKRNKRMLEI EKQVQTTIRR IIDKRLKAME EGETSKDDLL GILLESNLKE
      301 IELHGRNDLG ITTSEVIEEC KLIYFAGQET TSVLLVWTMI LLCLHPEWQV RARKEVLQTF
      361 GNDKPDLEGL SRLKIVTMIL YETLRLFPPL PAFGRRNKEE VKLGELHLPA GVLLVIPAIL
      421 VHYDKEIWGE DAKEFKPERF SEGVSKATNG QVSFIPFS
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NAME          D138-AD12
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 285
      1 TTTGCCTTTG CTCGTCATTG ATGACGACTT CATTTTGTTT TCTTCCCCAC GAAAATGGTA
     61 GATATGATAT GGAGGGACGT AGGGAAGAAT TACTGGGACA AACCTAGTGA GTGAAAATGG
    121 AAACAGTTGA AATGATAGTA AAAGTATCTT GTGCTGCCAT AGTAATTACT CTGTTGGTGT
    181 GTCTATGGAG AGTGCTGAAT TGGGTTTGGT TCAGACCAAA GAAATTAGAG AAGTTGTTGA
    241 GAAAACAGGT TTTGTATGGG GACATGAAAG AGTTTCTGG GATGATTAAG GAAGCATACT
    301 CAAAGCCTAT GAGTCTGTCT GATGATGTAG CACCACGAAT GATGCCTTTC TTTCTTGAAA
    361 CCATCAAGAA ATATGGAAAA AGATCCTTTA TATGGTTCGG TCCAAGACCA CTAGTATTGA
    421 TCATGGATCC TGAGCTTATA AAGGAAGTAC TCTCCAAAAT CTATCTTTAT CAAAAGCCCG
    481 GTGGAAATCC ATTAGCAACA CTATTGGTAC AAGGATTAGC AACCTATGAG GAAGACAAAT
    541 GGGCCAAACA TAGAAAAATC ATCAATCCCG CTTTCCATCT AGAGAAGCTA AAGCATATGC
    601 TTCCAGCTTT TCGCTTGAGC TGTAGTGAGA TGCTGAGCAA ATGGGAAGAC ATTGTTTCAG
    661 CTGAAGGCTC ACATGAGATA GATGTATGGC CTAACCTTGA GCAATTGAGT TGCGATGTGA
    721 TCTCTCGGAC AGCTTTTGGC AATAGTTATG AAGAAGGTAG AAAGATTTTT GAACTTCAAA
    781 AGGAACAAAC TCAGCATCTT GTGGAAGCTT TCCGCTCTGT TTATATCCCA GGAAGGAGAT
    841 TTTTGCCAAC AAAGAGGAAT AGAAGAATGA AGGAAATAAA AAAGGAGGTT CGAGCGTCAA
    901 TTAAAGGTAT TATTGATAAA AGATTGAAGG CAATGAAAGC AGGGGACACC AATAATGAGG
    961 ATCTATTGGG ATATTGCTGG AATCAAATTT TAAAGAAATT GAACAGCGCG GAAACAAGGA
   1021 TTTTGGAATG AGCATTGAAG ATGTCATTGA AGAATGCAAG TTATTCTATT TTGCTGGCCA
   1081 AGAAACTACA TCAGTGTTGC TCCTATGGTC TCTAGTGTCG TTGAGCAGGT ATCAAGATTG
   1141 GCAGACACGG GCCAGAGAAG AAGTCTTGCA TGTCTTTGGG AGTCGGAAAC CAGATTTTGA
   1201 TGAATTAAAT CATCTAAAAG TTGTGACAAT GATCATGTAC GAGTCTTTAA GGCTATATCC
   1261 CTCACTAATA ACACTTACCC GCCGGTGTAA TGAAGACATT GTATTAGGAG AACTATCTCT
   1321 ACCAGCTGGT GTCCTAGTCT CTTTGCCAAT GATTTTGTTG CATCATGATG AAGAGATATG
   1381 GGGTGAAGAT GCAAGGAGT TCAAACCAGA GAGATTTAGA GAAGGATTGT CAAGTGCAAC
   1441 AAAGGGTCAA CTTACATATT TTCCATTTGG CTGGGGTCCT AGAATATGTA TTGGACAAAA
   1501 TTTTGCCATG TTAGAAGCAA AGATGGCTCT GTCTATGATC CTGCAACGCT CTCTTTTTGA
   1561 ACTGTCTCCG TCTTATGCAC ATGCCCCTCA GTCCATATTA ACCGTTCAGC CTCAATATGG
   1621 TGCTCCACTT ATTTTCCACA AGCTATAATT TGGTACTTGT GAAAGGTGTC TTGTACAATA
   1681 TGTTAGTAGA GTTTATTCAG ACTTAGATAC ATGCTTC
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SEQ. ID. NO. 286
      1 METVEMIVKV SCAAIVITLL VCLWRVLNWV WFRPKKLEKL LRKQVLYGDM KEFSGMIKEA
     61 YSKPMSLSDD VAPRMMPFFL ETIKKYGKRS FIWFGPRPLV LIMDPELIKE VLSKIYLYQK
    121 PGGNPLATLL VQGLATYEED KWAKHRKIIN PAFHLEKLKH MLPAFRLSCS EMLSKWEDIV
    181 SAEGSHEIDV WPNLEQLSCD VISRTAFGNS YEEGRKIFEL QKEQTQHLVE AFRSVYIPGR
    241 RFLPTKRNRR MKEIKKEVRA SIKGIIDKRL KAMKAGDTNN EDLLGYCWNQ ILKKLNSAET
    301 RILE
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NAME   D216-AG8
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 287
      1 CCAAAATGCA GTTCTTCAAC TTCATTTCCT TTGTCTTTTT TGTGTCTTTC CTCTTTTTAT
     61 TAAGGAAATG GAAGAACTCC AATAGCCAAA CCAAAAGATT GCCTCCAGGT CCATGGAAAT
    121 TACCTGTACT TGGAAGCATG TTTCATTTGC TAGGTGGACC TCCACATCAT GTCCTTGGAG
    181 ATTTAGCCAA AAAATATGGT CCACTTATGC ACCTTCAACT AGGTGAAGTT TCTGTAGTTT
    241 CTGTTACTTC TCCTGAGATG GCAAAAGAAG TACTAAAAAC TCATGACCTC GCTTTTGCAT
    301 CTAGGCCGTT ACTTTTGGCA GCCAAAATTG TCTGCTATAA TGGGACAGAC ATTGTCTTTT
    361 CCCCCTATGG CGATTATTGG AGACAAACGC GTAAAATTTG TCTCTTGGAA TTGCTCAGTG
    421 CCAAAAATGT TAGGTCATTC AGCTCAGTCA GACGAGATGA AGTTTTCCAT ATGATTGAAT
    481 TTTTTTCGAT CATCTTCTGG TAAGCCAGTT AATGTATCAA AAAGGATTTC TCTATTCACA
    541 ACCTCTATGA CATGTAGATC AGCCTTTGGA CAAGAATACA AGGAGCAAGA CGAATTCGCA
    601 CAACTAGTAA AAAAAGTGTC AAGCTTAATG GAAGGGTTTG ATGTTGCTGA TATATTCCCT
    661 TCATTGAAGT TTCTTCATGT GCTCAGTGGA ATGAAGGCTA AAGTTATGGA TGCACACCAT
    721 GAGTTAGATG CCATTCTTGA AAAAATTATC AATGAGCACA AGAAAATTGC AACTGGAAAG
    781 AATAATAATG AATTAGGAGG TGAAGGATTA ATTGACGTAC TGCTAAGACT TATGAAAGAG
    841 GGAGGCCTTC AATTCCCGAT CACCAACGAC AACATCAAAG CTATTATTTT TGACATGTTT
    901 GGTGCGGGAA CGGAAACTTC ATCAACCACA ATTGACTGGG CCATGGTCGA AATGATAAAG
    961 AATCCAAGTG TATTCGCTAA AGCTCAAGCA GAGGTAAGAG AAGCCTTCAG AGAGAAAGAA
   1021 ACTTTTGATG AAAATGATGT CGAGGAGTTG AAATACTTAA AATTGGTTAT CAAAGAAACT
   1081 TTCAGACTCC ATCCTCCATT TCCCCTTTTG CTCCCAAGAG AATCTAGAGA AGAAACAGAT
   1141 ATAAACGGCT ACACTATTCC TTTTAAAACA AAACTTATGG TTAACGTTCG GGCTATTGGA
   1201 AGAGATCCAA AATATTGGGA TGACGTGGAA AGTTTTAAGC CAGAGAGATT TGAGCACAAC
   1261 TCTATGGATT TTATTGGTAA TAATTTTGAA TATCTTCCCT TTGGTAGTGG AAGGAGAATG
   1321 TGCCCTGGGA TATCATTTGG TTTGGCTAAT GTTTATTTGC CACTAGCTCA ATTGTTATAT
   1381 CATTTTGATT GGAAACTCCC TACTGGAATC AATTCAAGTG ACTTGGACAT GACTGAGTCG
   1441 TCAGGAGTAA CTTGTGCTAG AAAGAGTGAT TTATACTTGA CTGCTACTCC ATATCAACTT
   1501 TCTCAAGAGT GATGCAATGA TATCAACCTT TTGAATTTCG GTCAACCCCA CCAATAGTG

SEQ. ID. NO. 288
      1 MQFFNFISFV FFVSFLFLLR KWKNSNSQTK RLPPGPWKLP VLGSMFHLLG GPPHHVLGDL
     61 AKKYGPLMHL QLGEVSVVSV TSPEMAKEVL KTHDLAFASR PLLLAAKIVC YNGTDIVFSP
    121 YGDYWRQTRK ICLLELLSAK NVRSFSSVRR DEVFHMIEFF SIIFW

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NAME        D243-AB3
ORGANISM    NICOTIANA TABACUM
SEQ. ID. NO. 289
        1 CCCCACCAAA AAATCATTTC TCTCGTCTAA AATGGATCTT CTCTTACTAG AGAAGACCTT
       61 AATTGGTCTT TTCTTTGCCA TTTTAATCGC TTTAATTGTC TCTAAACTTC GTTCAAAGCG
      121 TTTTAAGCTT CCTCCAGGAC CAATTCCAGT ACCAGTTTTT GGTAATTGGC TTCAAGTTGG
      181 TGATGATTTA AACCACAGAA ATCTTACTGA TTATGCCAAG AAATTTGGAG ATCTTTTCTT
      241 GTTAAGAATG GGTCAACGTA ACTTAGTTGT TGTGTCATCT CCTGAATTAG CTAAAGAAGT
      301 TTTACACACA CAAGGTGTTG AATTGGTTC AAGAACAAGA AATGTTGTGT TTGATATTTT
      361 TACTGGAAAA GGTCAAGATA TGGTTTTTAC TGTATATGGT GAACATTGGA GAAAAATGAG
      421 GAGAATTATG ACTGTACCAT TTTTTACTAA TAAAGTTGTG CAACAGTATA GAGGGGGGTG
      481 GGAGTTTGAG GTGGCAAGTG TAATTGAGGA TGTGAAAAAA AATCCTGAAT CTGCTACTAA
      541 TGGGATCGTA TTAAGGAGGA GATTACAATT AATGATGTAT AATAATATGT TTAGGATTAT
      601 GTTTGATAGG AGATTTGAGA GTGAAGATGA TCCTTTGTTT GTTAAGCTTA AGGCTTTGAA
      661 TGGTGAAAGG AGTAGATTGG CTCAAAGTTT TGAGTATAAT TATGGTGATT TTATTCCAAT
      721 TTTGAGGCCT TTTTTTGAGA GGTTATTTGA AGATCTGTAA AGAAGTTAAG GAGAAGAGGC
      781 TGCAGCTTTT CAAAGATTAC TTTGTTGATG AAAGAAAGAA GCTTTCGAAT ACCAAGAGCT
      841 CGGACAGCAA TGCCCTAAAA TGTGCGATTG ATCACATTCT TGAGGCTCAA CAGAAGGGAG
      901 AGATCAATGA GGACAACGTT CTTTACATTG TTGAAAACAT CAATGTTGCT GCAATTGAAA
      961 CAACATTATG GTCAATTGAG TGGGGTATCG CCGAGCTAGT CAACCACCCT CACATCCAAA
     1021 AGAAACTGCG CGACGAGATT GACACAGTTC TTGGACCAGG AGTGCAAGTG ACTGAACCAG
     1081 ACACCCACAA GCTTCCATAC CTTCAGGCTG TGATCAAGGA GGCACTTCGT CTCCGTATGG
     1141 CAATTCCTCT ATTAGTCCCA CACATGAACC TTCACGACGC AAAGCTTGGC GGGTTTGATA
     1201 TTCCAGCAGA GAGCAAAATC TTGGTTAACG CTTGGTGGTT AGCTAACAAC CCGGCTCATT
     1261 GGAAGAAACC CGAAGAGTTC AGACCCGAGA GGTTCTTTGA AGAGGAGAAG CATGTTGAGG
     1321 CCAATGGCAA TGACTTCAGA TATCTTCCGT TTGGCGTTGG TAGGAGGAGC TGCCCTGGAA
     1381 TTATACTTGC ATTGCCAACT CTTGGCATCA CTTTGGGACG TTTGGTTCAG AACTTTGAGC
     1441 TGTTGCCTCC TCCAGGCCAG TCGAAGCTCG ACACCACAGA GAAAGGTGGA CAGTTCAGTC
     1501 TCCACATTTT GAAGCATTCC ACCATTGTGT TGAAACCAAG GTCTTTCTGA ACTTTGTGAT
     1561 CTTATTAATT AAGGGGTTCT GAAGAAATTT GATAGTGTTG G

SEQ. ID. NO. 290
        1 MDLLLLEKTL IGLFFAILIA LIVSKLRSKR FKLPPGPIPV PVFGNWLQVG DDLNHRNLTD
       61 YAKKFGDLFL LRMGQRNLVV VSSPELAKEV LHTQGVEFGS RTRNVVFDIF TGKGQDMVFT
      121 VYGEHWRKMR RIMTVPFFTN KVVQQYRGGW EFEVASVIED VKKNPESATN GIVLRRRLQL
      181 MMYNNMFRIM FDRRFESEDD PLFVKLKALN GERSRLAQSF EYNYGDFIPI LRPFFERLFE
      241 DL
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NAME   D205-AH4
ORGANISM   NICOTIANA TABACUM
SEQ. ID. NO. 291

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   1 GTGAGGTTTG AATCCTCTGC CTCAATGAAA CTCACCAAAT TGGTTTTCTA ATTTCCATCT
  61 AAAATATTGT CCAAAGCTAA AGATTCTTTC TCCTTAAATA GTCAACTTTA GTGGTTCCTC
 121 TTCATTTCAT AGCTCAATCT TTCTTATTTT GATTCAACCA TGGAGAACCA ATACTCCTAC
 181 TCATTCTCTT CCTACTTCTA CTTAGCTATA GTACTGTTTC TTCTTCCAAT TTTGGTCAAA
 241 TATTTCTTCC ATCGGAGAAG AAATTTACCT CCAAGTCCAT TTTCTCTTCC AATAATTGGT
 301 CACCTTTACC TTCTCAAGAA AACTCTCCAT CTCACTCTAA CATCCTTATC AGCTAAATAT
 361 GGTCCTGTTT TATACCTCAA ATTGGGCTCT ATGCCTGTGA TTGTTGTGTC CTCACCATCT
 421 GCTGTTGAAG AATGTTTAAC CAAGAATGAT ATCATATTCG CAAATAGGCC CAAGACCGTG
 481 GCTGGTGACA AGTTTACCTA CAATTATACT GTTTATGTTT GGGCACCCTA TGGCCAACTT
 541 TGGAGAATTC TTCGCCGATT AACTGTCGTT GAACTCTTCT CTTCACATAG CCTACAGAAA
 601 ACTTCTATCC TTAGAGATCA AGAAGTTGCA ATATTTATCC GTTCGTTATA CAAATTCTCA
 661 AAGGATAGTA GCAAAAAAGT CGATTGACC AACTGGTCTT TTACTTTGGT TTTCAATCTT
 721 ATGACCAAAA TTATTGCTGG AGACATATT GTGAAGGAGG AAGATGCTGG CAAGGAAAAG
 781 GGCATTGAAA TTATTGAAAA ACTTAGAGGG ACTTTCTTAG TAACTACATC ATTCTTGAAT
 841 ATGTGTGATT TCTTGCCAGT ATTCAGGTGG GTTGGTTACA AAGGGCTGGA GAAGAAGATG
 901 GCCTCAATTC ACAATAGAAG AAATGAATTC TTGGACAGCT TGCTTGATGA ATTTCGACAC
 961 AAGAAAAGTA GTGCTTCACA ATCTAACACA ACTGTTGGAA ACATGGAGAA GAAAACCACA
1021 CTGATTGAAA AGCTCTTGTC TCTTCAAGAA TCAGAGCCTG AATTCTACAC TGATGATATC
1081 ATCAAAAGTA TTATGCTGGT AGTTTTTGTT GCAGGAACAG AGACCTCATC AACAACCATC
1141 CAATGGGTAA TGAGGCTTCT TGTAGCTCAC CCTGAGGCAT TGTATAAGCT ACGAGCTGAC
1201 ATTGACAGTA AAGTTGGGAA TAAGCGCTTG CTGAATGAAT CAGACCTCAA CAAGCTTCCG
1261 TATTTGCATT GTGTTGTTAA TGAGACAATG AGATTATACA CTCCGATACC ACTTTTATTG
1321 CCTCATTATT CAACTAAAGA TTGTATTGTG GAAGGATATG ATGTACCAAA ACATACAATG
1381 TTGTTTGTCA ACGCTTGGGC CATTCACAGG GATCCCAAGG TATGGGAGGA GCCTGACAAG
1441 TTCAAGCCAG AGAGATTTGA GGCAACAGAA GGGGAAACAG AAAGGTTCAA TTACAAGCTT
1501 GTACCATTTG GAATGGGGAG AAGAGCGTGC CCTGGAGCTG ATATGGGGTT GCGAGCAGTT
1561 TCTTTGGCAT TAGGTGCACT TATTCAATGC TTTGACTGGC AAATTGAGGA AGCGGAAAGC
1621 TTGGAGGAAA GCTATAATTC TAGAATGACT ATGCAGAACA AGCCTTTGAA GGTTGTCTGC
1681 ACTCCACGCG AAGATCTTGG CCAGCTTCTA TCCCAACTCT AAGGCAATTT ATCAATGCCA
1741 AACGTAATCT TCATCTACCA CTATG
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SEQ. ID. NO. 292

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   1 MENQYSYSFS SYFYLAIVLF LLPILVKYFF HRRRNLPPSP FSLPIIGHLY LLKKTLHLTL
  61 TSLSAKYGPV LYLKLGSMPV IVVSSPSAVE ECLTKNDIIF ANRPKTVAGD KFTYNYTVYV
 121 WAPYGQLWRI LRRLTVVELF SSHSLQKTSI LRDQEVAIFI RSLYKFSKDS SKKVDLTNWS
 181 FTLVFNLMTK IIAGRHIVKE EDAGKEKGIE IIEKLRGTFL VTTSFLNMCD FLPVFRWVGY
 241 KGLEKKMASI HNRRNEFLNS LLDEFRHKKS SASQSNTTVG NMEKKTTLIE KLLSLQESEP
 301 EFYTDDIIKS IMLVVFVAGT ETSSTTIQWV MRLLVAHPEA LYKLRADIDS KVGNKRLLNE
 361 SDLNKLPYLH CVVNETMRLY TPIPLLLPHY STKDCIVEGY DVPKHTMLFV NAWAIHRDPK
 421 VWEEPDKFKP ERFEATEGET ERFNYKLVPF GMGRRACPGA DMGLRAVSLA LGALIQCFDW
 481 QIEEAESLEE SYNSRMTMQN KPLKVVCTPR EDLGQLLSQL
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NAME            D267-AF10
ORGANISM        NICOTIANA TABACUM
SEQ. ID. NO. 293
      1 AACATCCTTT  CCTTCTTCCA  AAAATGGAGC  TTCAATCTTC  TCCTTTCAAT  TTAATTTCTT
     61 TGTTCCTCTT  CTTTTCTTTT  CTTTTTATTC  TAGTGAAGAA  ATGGAATGCC  AAAATCCCAA
    121 AGTTACCTCC  AGGTCCGTGG  AGGCTTCCCT  TTATTGGAAG  CCTCCATCAC  TTGAAGGGAA
    181 AACTTCCACA  CCATAATCTT  AGAGATCTAG  CGCGAAAATA  TGGACCTCTC  ATGTACTTAC
    241 AACTCGGAGA  AATTCCTGTA  GTTGTAATAT  CTTCGCCACG  TGTAGCAAAA  GCTGTACTAA
    301 AAACTCATGA  TCTCGCTTTT  GCAACTAGAC  CACGATTCAT  GTCCTCAGAC  ATTGTGTTTT
    361 ACAAAAGCAG  GGACATCTCT  TTTGCCCCAT  TTGGTGATTA  CTGGAGACAG  ATGCGTAAAA
    421 TATTGACTCA  GGAACTCCTG  AGCAACAAGA  TGCTCAAGTC  ATATAGCTTA  ATCCGAAAGG
    481 ATGAGCTCTC  GAAGCTCCTC  TCATCGATTC  GTTTGGAAAC  AGGTTCTGCA  GTGAACATAA
    541 ATGAAAAGCT  TCTCTGGTTT  ACGAGCTGCA  TGACCTGTAG  ATTAGCCTTT  GGAAAAATAT
    601 GCAATGATCG  GGATGAGTTG  ATCATGCTAA  TTAGGGAGAT  ATTAACATTA  TCAGGAGGAT
    661 TTGATGTGGG  TGATTTGTTC  CCTTCCTGGA  AATTACTTCA  TAATATGAGC  AACATGAAAG
    721 CTAGGTTGAC  GAATGTACAC  CACAAGTATG  ATTTAGTTAT  GGAGAACATC  ATCAATGAGC
    781 ACCAAGAGAA  TCATGCAGCA  GGGATAAAGG  GTAACAACGA  GTTTGGTGGC  GAAGATATGA
    841 TCGATGCTCT  ACTGAGGGCT  AAGGAGAATA  ATGAGCTTCA  ATTTCCTATC  GAAAATGACA
    901 ACATGAAAGC  AGTAATTCTG  GACTTGTTTA  TTGCTGGAAC  TGAAACTTCA  TATACTGCAA
    961 TTATATGGGC  ACTATCAGAA  TTGATGAAGC  ACCCAAGTGT  GATGGCCAAG  CAACAAGCTG
   1021 AAGTGAGAAA  AGTCTTCAAA  GAAAATGAAA  ATTTCGACGA  AAATGATCTT  GACAAGTTGC
   1081 CATACCTAAA  ATCAGTGATT  AAAGAAACAC  TAAGGATGCA  CCCTCCAGTT  CCTTTGTTAG
   1141 GGCCTAGAGA  ATGCAGGGAC  CAAACAGAGA  TCGATGGCTA  CACTGTACCT  ATTAAAGCTA
   1201 GAGTTATGGT  TAATGCTTGG  GCGATAGGAA  GAGATCCTGA  AAGTTGGGAA  GATCCTGAAA
   1261 GTTTCAAACC  GGAGCGATTT  GAAAATACTT  CTGTTGATCT  TACAGGAAAT  CACTATCAGT
   1321 TCATTCCTTT  CGGTTCAGGA  AGAAGAATGT  GTCCAGGAAT  GTCGTTTGGT  TTAGTTAACA
   1381 CAGGGCATCC  TTTAGCCCAG  TTGCTCTATT  GCTTTGACTG  GAAACTCCCT  GACAAGGTTA
   1441 ATGCAAATGA  TTTTCGCACT  ACTGAAACAA  GTAGAGTTTT  TGCAGCAAGC  AAAGATGACC
   1501 TCTACTTGAT  TCCCACAAAT  CACAGGGAGC  AAGAATAGCT  TAATTTAATG  GAGTTCTTGG
   1561 AAGAATTAAA  GAAGAAGGGC  TATATAGGTG  AGATTTTTTG  TATGGTTGCA  AGGTTTTTAG
   1621 TTCATACAAT  AAGACAATAC  ATTATATTCC  AGTATTGTGT  ATCATGTATA  ATAAGGTTCC
   1681 TTTTGTTTAA  AAAA
```

```
SEQ. ID. NO. 294
      1 MELQSSPFNL  ISLFLFFSFL  FILVKKWNAK  IPKLPPGPWR  LPFIGSLHHL  KGKLPHHNLR
     61 DLARKYGPLM  YLQLGEIPVV  VISSPRVAKA  VLKTHDLAFA  TRPRFMSSDI  VFYKSRDISF
    121 APFGDYWRQM  RKILTQELLS  NKMLKSYSLI  RKDELSKLLS  SIRLETGSAV  NINEKLLWFT
    181 SCMTCRLAFG  KICNDRDELI  MLIREILTLS  GGFDVGDLFP  SWKLLHNMSN  MKARLTNVHH
    241 KYDLVMENII  NEHQENHAAG  IKGNNEFGGE  DMIDALLRAK  ENNELQFPIE  NDNMKAVILD
    301 LFIAGTETSY  TAIIWALSEL  MKHPSVMAKA  QAEVRKVFKE  NENFDENDLD  KLPYLKSVIK
    361 ETLRMHPPVP  LLGPRECRDQ  TEIDGYTVPI  KARVMVNAWA  IGRDPESWED  PESFKPERFE
    421 NTSVDLTGNH  YQFIPFGSGR  RMCPGMSFGL  VNTGHPLAQL  LYCFDWKLPD  KVNANDFRTT
    481 ETSRVFAASK  DDLYLIPTNH  REQE
```

```
NAME          D284-AH5
ORGANISM      NICOTIANA TABACUM
SEQ. ID. NO. 295
        1 CAATCAGTGG ATGCGGGAGT AATATATAAT ATGCAAGTTG TAGAAAGAGA AAAAAAAAAT
       61 CAAGTAGCTA TTCTATACTG GGGCACAAAT AGTGAGTGAA AATGGAGACT GTTCAAATCA
      121 TAATAACAGC ATCTTGTGCT GCCATAATAA TTACTCTAGT GGTGTGTATT TGGAGAGTAC
      181 TGAATTGGGT TTGGTTCAGA CCAAAGAAGC TGGAAAAACT ATTGAGGAAA CAAGGTCTCA
      241 AAGGCAACTC CTACAAGATT TTGTATGGGG ATATGAAGGA GCTTTCTGGT ATGATTAAGG
      301 AAGCTAATTC CAAACCCATG AATCTTTCTG ATGATATTGC ACCAAGATTG GTGCCTTTCT
      361 TTCTTGACAC CATCAAGAAA TATGGTAAAA AATCCTTTGT ATGGTTAGGT CCGAAACCAC
      421 TGGTTCTTAT CATGGACCCT GAGCTTATAA AGGAAATATT TTCCAAATAC TATCTGTATC
      481 AAAAGCCTCA TGGAAATCCA GTTACCAAGC TATTAGTACA AGGACTAGTA AGCCTAGAGG
      541 AAGACAAATG GGCCAAACAT AGAAAAATCA TCAATCCAGC TTTCCATCTA GAGAAGCTAA
      601 AGCATATGCT TCCAGCTTTT TGCTTGAGCT GCACTGAGAT GCTGTGCAAA TGGGAAGATA
      661 TTGTTTCAAT TAAGGGCTCA CATGAGATAG ATGTATGGCC TCACCTTGAA CAATTAAGTA
      721 GCGATGTGAT CTCTCGGACA GCTTTTGGCA GTAACTTTGA AGAAGGTAAA AGGATATTTG
      781 AACTTCAGAA GGAACAAGCT CAGTATTTTG TAGAAGCTAT ACGCTCGGTT TATATACCAG
      841 GCTGGAGGTT TTTGCCAACA AAGAGGAACA GAAGAATGAA GGAAGTTGAA AAGGATGTTC
      901 GGGCCTCGAT AAGAGGCATT ATTGATAAAA GAGTGAAGGC AATGAAAGCA GGAGAGGCGA
      961 GTAATGAGGA TCTACTTGGT ATATTGTTGG AATCTAATTT TACAGAAGCT GAACAGCATA
     1021 GACACAAGGA TTCTGCGATG AGCATTGAAG AAGTCATTCA AGAATGCAAG TTATTCTATG
     1081 TTGCTGGCCA AGAAACTACA TCAGTGTTGC TTGTGTGGAC TCTAATATTG TTGAGTAGGC
     1141 ATCAAGATTG GCAGAGCCGA GCCAGAGAAG AGGTGTTTCA AGTCTTTGGT AATCAGAAAC
     1201 CAGATTTTGA CGGATTGAAT CGTCTAAAAG TTGTGACAAT GATCTTGTAT GAGTCTTTAA
     1261 GGCTATACTC CCCAGTAGTG TCACTAATCC GGCGGCCTAA TGAGGATGCT ATATTAGGAA
     1321 ATGTATCTCT GCCAGAAGGT GTGCTACTCT CATTACCAGT GATCTTATTA CACCACGATG
     1381 AAGAGATATG GGGTAAAGAT GCAAAGAAGT TCAATCCAGA AAGATTTAGA GATGGAGTCT
     1441 CAAGTGCAAC AAAGGGTCAA GTCACTTTTT TTCCATTTAC TTGGGGTCCC AGAATATGCA
     1501 TCGGACAAAA TTTTGCCATG TTAGAAGCAA AGACTGCTTT GGCTATGATC CTACAACGCT
     1561 TCTCATTCGA ACTGTCTCCA TCTTATGCAC ATGCTCCTCA GTCCATATTA ACTATGCAAC
     1621 CCCAACATGG TGCTCCACTA ATTCTGCACA AAATATAGTT TGTTACTTTA AGCAGTGTCT
     1681 TGTTATATGT CAGAGAGTCC AAAATGTTTA ATTAAGGCTT GTAGAACTGC CAAATGGAAC
     1741 TTCATTTGCA TTCGTGGGTT GTAGATTGTT GTAATTGGAC AAGTATACTG TTTATTTTAG
     1801 AGTTTTAAGA AAAAAAAAA

SEQ. ID. NO. 296
        1 METVQIIITA SCAAIIITLV VCIWRVLNWV WFRPKKLEKL LRKQGLKGNS YKILYGDMKE
       61 LSGMIKEANS KPMNLSDDIA PRLVPFFLDT IKKYGKKSFV WLGPKPLVLI MDPELIKEIF
      121 SKYYLYQKPH GNPVTKLLVQ GLVSLEEDKW AKHRKIINPA FHLEKLKHML PAFCLSCTEM
      181 LCKWEDIVSI KGSHEIDVWP HLEQLSSDVI SRTAFGSNFE EGKRIFELQK EQAQYFVEAI
      241 RSVYIPGWRF LPTKRNRRMK EVEKDVRASI RGIIDKRVKA MKAGEASNED LLGILLESNF
      301 TEAEQHRHKD SAMSIEEVIQ ECKLFYVAGQ ETTSVLLVWT LILLSRHQDW QSRAREEVFQ
      361 VFGNQKPDFD GLNRLKVVTM ILYESLRLYS PVVSLIRRPN EDAILGNVSL PEGVLLSLPV
      421 ILLHHDEEIW GKDAKKFNPE RFRDGVSSAT KGQVTFFPFT WGPRICIGQN FAMLEAKTAL
      481 AMILQRFSFE LSPSYAHAPQ SILTMQPQHG APLILHKI
```

Figure 149: Amino Acid Identity of Group Members

Group 1
AQLAINLVTSMLGHLLHHFTWAPAPGVNPEDIDLEESPGTVTYMKNPIQAIPTPRLPAHLYGRVPVDM   SEQ ID No.:2 D58-BG7
                                     | (98.5)
AQLAINLVTSMLGHLLHHFTWAPPPGVNPENIDLEESPGTVTYMKNPIQAIPTPRLPAHLYGRVPVDM   SEQ ID No.:4 D58-AB1

Group 2
QLAINLVTSMLGHLFIILHGLRPRGLTRRILTWRRALEQ   SEQ ID No.:8 D58-BE4

Group 3
EGLAVRMVALSLGCIIQCFDWQRIGEELVDMTEGTGLTLPKAQPLVAKCSPRPKMANLLSQI   SEQ ID No.:10 D56-AH7
   | | | | (93.5)
EGLAIRMVALSLGCIIQCFDWQRLGEGLVDKTEGTGLTLPKAQPLVAKCSPRPIMANLLSQI   SEQ ID No.:12 D13a-5

Group 4
IGFATLVTHLTFGRLLQGFDFSKPSNTPIDMTEGVGVTLPKVNQVEVLITPRLPSKLYLF   SEQ ID No.:14 D56-AG10
| | | | (93.3)
INFATLVTHLTFGRLLQGFDFSTPSNTPIDMTEGVGVTLPKVNQVEVLISPRLPSKLYVF   SEQ ID No.:18 D34-62

Group 5
IILALPILGITLGRLVQNFELLPPPGQSKLDTTEKGGQFSLHILKHSTIVLKPRSF   SEQ ID No.:20 D56-AA7
                                               | (98.2)
IILALPILGITLGRLVQNFELLPPPGQSKLDTTEKGGQFSLHILKHSTIVMKPRSF   SEQ ID No.:144 D185-BD3
                                             | | (96.4)
IILALPILGITLGRLVQNFELLPPPGQSKLDTTEKGGQFSLHILKHSTIVLKPRSC   SEQ ID No.:22 D56-AE1

Group 6
IALGVASMELALSNLLYAFDWELPFGMKKEDIDTNARPGITMHKKNELYLIPKNYL   SEQ ID No.:24 D35-BB7
                         | | | | | (92.8)
IALGVASMELALSNLLYAFDWELPYGVKKENIDTNVRPGITMHKKNELCLIPRNYL   SEQ ID No.:26 D177-BA7
                                        | | (96.4)
IALGVASMELALSNLLYAFDWELPYGVKKEDIDTNVRPGIAMHKKNELCLVPKNYL   SEQ ID No.:28 D56A-AB6
                                             ||| (94.6)
IALGVASMELALSNLLYAFDWELPYGVKKEDIDTNVRPGIAMHKKNELCLVPKKLFINYIGTWISC   SEQ ID No.:30 D144-AE2

Group 7
ISFGLANAYLPLAQLLYHFDWELPTGIKPSDLDLTELVGVTAARKSDLYLVATPYQPPQN   SEQ ID No.:32 D56-AG11
                         | | | | (93.3)
ISFGLANAYLPLAQLLYHFDWKLPAGIEPSDLDLTELVGVTAARKSDLYLVATPYQPPQK   SEQ ID No.:34 D179-AA1

Group 8
MLFGLANVGQPLAQLLYHFDWKLPNGQSHENFDMTESPGISATRKDDLVLIATPYDSY   SEQ ID No.:36 D56-AC7
                          | | | || (91.2)
MLFGLANVGQPLAQLLYHFDWKLPNGQTHQNFDMTESPGISATRKDDLILIATPAHS   SEQ ID No.:38 D144-AD1

Group 9
LLFGLVNVGHPLAQLLYHFDWKTLPGISSDSFDMTETDGVTAGRKDDLCLIATPFGLN   SEQ ID No.:40 D144-AB5

Group 10
MSFGLVNTGHPLAQLLYFFDWKFPHKVNAADFHTTETSRVFAASKDDLYLIPTNHMEQE   SEQ ID No.:42 D181-AB5
              | | | | | | | (89.8)
MSFGLVNTGHPLAQLLYCFDWKLPDKVNANDFRTTETSRVFAASKDDLYLIPTNHREQE   SEQ ID No.:44 D73-Ac9

Group 11
MQFGLALVTLPLAHLLHNFDWKLPEGINARDLDMTEANGISARREKDLYLIATPYVSPLD   SEQ ID No.:46 D56-AC12

Group 12
MTYALQVEHLTMAHLIQGFNYRTPTDEPLDMKEGAGITIRKVNPVKVIITPRLAPELY   SEQ ID No.:48 D58-AB9
            | | | || | (89.6)
MTYALQVEHLTMAHLIQGFNYKTPNDEALDMKEGAGITIRKVNPVELIIAPRLAPELY   SEQ ID No.:50 D56-AG9
                                                | (98.2)
MTYALQVEHLTMAHLIQGFNYKTPNDEALDMKEGAGITIRKVNPVELIITPRLAPELY   SEQ ID No.:52 D56-AG6
            | | | | (94.8)
MTYALQVEHLTMAHLIQGFNYRTPNDEPLDMKEGAGITIRKVNPVELIIAPRLAPELY   SEQ ID No.:54 D35-BG11
                                                     | (98.3)
MTYALQVEHLTMAHLIQGFNYRTPNDEPLDMKEGAGITIRKVNPVELIIAP-LAPELY   SEQ ID No.:56 D35-42
                                                     | (98.3)
MTYALQVEHLTMAHLIQGFNYRTPNDEPLDMKEGAGITIRKVNPAELIIAPRLAPELY   SEQ ID No.:58 D35-BA3
           | | | | ||||| (84.5)
MTYALQVEHLTIAHLIQGFNYKTPNDEPLDMKEGAGLTIRKVNPVEVTTTARLAPELY   SEQ ID No.:60 D34-57
                                                  | (98.3)
MTYALQVEHLTIAHLIQGFNYKTPNDEPLDMKEGAGLTIRKVNPVEVTITARLAPELY   SEQ ID No.:62 D34-52

Group 13
YSLGLKVIRVTLANMLHGFNWKLPEGMKPEDISVEEHYGLTTHPKFPVPVILESRLSSDLYSPIT   SEQ ID No.:66 D56-AD10

Group 14
YSLGIRIIRATLANLLHGFNWRLPNGMSPEDISMEEIYGLITHPKVALDVMMEPRLPNHLYK   SEQ ID No.:68 D56-AA11

Group 15
INFSIPLVELALANLLFHYNWSLPEGMLAKDVDMEEALGITMHKKSPLCLVASHYTC   SEQ ID No.:70 D177-BD5
                           | || (94.7)
INFSIPLVELALANLLFHYNWSLPEGMLPKDVDMEEALGITMHKKSPLCLVASHYNLL   SEQ ID No.:84 D177-BD7

Group 16
MQLGLYALEMAVAHLLLCFTWELPDGMKPSELKMDDIFGLTAPRANRLVAVPSPRLLCPLY   SEQ ID No.:74 D58-BC5
        | | (96.7)
MQLGLYALEMAVAHLLHCFTWELPDGMKPSELKMDDIFGLTAPRANRLVAVPTPRLLCPLY   SEQ ID No.:76 D58-AD12
                                               | (98.4)
MQLGLYALEMAVAHLLHCFTWELPDGMKPSELKMDDIFGLTAPKANRLVAVPTPRLLCPLY   SEQ ID No.:72 D56A-AG10

Group 17
MLWSASIVRVSYLTCIYRFQVYAGSVFRVA   SEQ ID No.:78 D56-AC11

```
                    |                                                    (96.7)
MLWSASIVRVSYLTCIYRFQVYAGSVSRVA                      SEQ ID No.:88 D56-AD6F
```

Group 18
```
LNFAMLEAKMALALILQHYAFELSPSYAHAPHTIITLQPQHGAPLILRKL  SEQ ID No.:90 D73A-AD6
```

Group 19
```
QNFAILEAKMAIAMILQRFSFELSPSYTHSPYTVVTLKPKYGAPLIMHRL  SEQ ID No.:96 D70A-AB5
    |      ||         | | |||| || |         ||                       (72.0)
QNFAMLEAKMALSMILQRFSFELSPSYAHAPQSILTVQPQYGAPLIFHKL  SEQ ID No.:100 D70A-AB8
|    |    ||       |      || |         |                             (82.0)
INFAMTEAKMAMAMILQRFSFELSPSYTHAPQSVITMQPQYGAPLILHKL  SEQ ID No.:102 D70A-BH2
|                                                                    (98.0)
INFAMAEAKMAMAMILQRFSFELSPSYTHAPQSVITMQPQYGAPLILHKL  SEQ ID No.:104 D70A-AA4
|    |    |    ||        |||| ||         ||||                        (70.0)
QNFAMMEAKMAVAMILHKFSFELSPSYTHAPFAIVTIHPQYGAPLLMRRL  SEQ ID No.:108 D70A-BA9
                |                                                    (98.0)
QNFAMMEAKMAVAMILQKFSFELSPSYTHAPFAIVTIHPQYGAPLLMRRL  SEQ ID No.:106 D70A-BA1
```

Group 20
```
QNFAMLEAKMAMAMILKTYAFELSPSYAHAPHPLLLQPQYGAQLILYKL   SEQ ID No.:110 D70A-BD4
```

Group 21
```
YSMGLKAIQASLANLLHGFNWSLPDNMTPEDLNMDEIFGLSTPKKFPLATVIEPRLSPKLYSV  SEQ ID No.:112 D181-AC5
   |  |                                                                       (96.8)
YSLGLKEIQASLANLLHGFNWSLPDNMTPEDLNMDEIFGLSTPKKFPLATVIEPRLSPKLYSV  SEQ ID No.:114 D144-AH1
|   |                                                                         (96.8)
HSLGLKVIQASLANLLHGFNWSLPDNMTPEDLNMDEIFGLSTPKKFPLATVIEPRLSPKLYSV  SEQ ID No.:116 D34-65
```

Group 22
```
LCFPCLISSYILALNVNLYHNFLQISPSISY                     SEQ ID No.:118 D35-BG2
```

Group 23
```
SGLAQCVVGLALATLVQCFEWKRVSEEVVDLTEGKGLTMPKPEPLMARCEARDIFHKVLSEIS  SEQ ID No.:120 D73A-AH7
```

Group 24
```
LGLATVHVNLMLARMIQEFEWSAYPENRKVDLLRNWNLLW            SEQ ID No.:136 D185-BG2
                 ||||||||||                                         (77.5)
LGLATVHVNLMLARMIQEFEWSAYPENRKVDFTEKLEFTVVMKNPLRAKVKPRMQVV  SEQ ID No.:122 D58-AA1
             |                                                      (98.2)
LGLATVHVNLMLARTIQEFEWSAYPENRKVDFTEKLEFTVVMKNPLRAKVKPRMQVV  SEQ ID No.:134 D185-BC1
```

Group 25
YALAMLHLEYFVANLVWHFRWEAVEGDDVDLSEKLEFTVVMKNPLRARICPRVNSI   SEQ ID No.:124 D73A-AE10

Group 26
QQVGLLRTTIFIASLLSEYKLKPRSHQKQVELTDLNPASWLHSIKGELLVDAIPRKKAAF   SEQ ID No.:126 D56A-AC12

Group 27
ITFAKFVNELALARLMFHFDFSLPKGVKHEDLDVEEAAGITVRRKFPLLAVATPCS   SEQ ID No.:128 D177-BF7
                                          | (98.2)
ITFAKFVNELALARLMFHFDFSLPKGVKHADLDVEEAAGITVRRKFPLLAVATPCS   SEQ ID No.:140 D185-BD2

Group 28
QRYAINHLMLFIALFTALIDFKRHKTDGCDDIAYIPTIAPKDDCKVFLSQRCTRFPSFS   SEQ ID No.:130 D73A-AG3

Group 29
MSFGLANLYLPLAQLLYHFDWKLPTGIKPRDLDLTELSGITIARKGDLYLNATPYQPSRE   SEQ ID No.:132 D70A-AA12
| ||| | | | | | | | | (80.0)
ISFGLANVYLPLAQLLYHFDWKLPTGINSSDLDMTESSGVTCARKSDLYLTATPYQLSQE   SEQ ID No.:86 176-BF2

Group 30   SEQ ID No.:146 D176-BC3
QNFAMLEAKTTLAMILQRFSFELSPSYAHAPQSIITCNPSMVLHLFCIKYSLLLVSSVSFYVKHESKMLRLVELQNGNAFALVHCRLL

Group 31
ADMGLRAVSLALGALIQCFDWQIEEAESLEESYNSRMTMQNKPLKVVCTPREDLGQLLSQL   SEQ ID No.:148 D176-BB3

Group 32
MNYSLQVEHLSIAHMIQGFSFATTTNEPLDMKQGVGLTLPKKTDVEVLITPRLPPTLYQY   SEQ ID No.:6 D186-AH4

The percentage identity between most related pairs is noted in (0.0%). Each group had at least 70% identity to another group member. Group 19 contained the lowest percentage identity at 70.0%.

FIGURE 150: COMPARISON OF SEQUENCE GROUPS

ALIGNMENT OF GROUP 1

```
D58-BG7        GCACAACTTGCTATCAACTTGGTCACATCTATGTTGGGTCATTTGTTGCATCATTTTACA   SEQ ID No 1
                                                             |
D58-AB1        GCACAACTTGCTATCAACTTGGTCACATCTATGTTGGGTCATTTGTTGCATCATTTTACG   SEQ ID No 3
                                                             |
D58-BE4        GCACAACTTGCTATCAACTTGGTCACATCTATGTTGGGTCATTTGTT-CATCATTTTACA   SEQ ID No 7
               *********************************************** ***********

D58-BG7        TGGGCTCCGGCCCCGGGGGTTAACCCGGAGGATATTGACTTGGAGGAGAGCCCTGGAACA
                        |                   |
D58-AB1        TGGGCTCCGCCCCCGGGGGTTAACCCGGAGAATATTGACTTGGAGGAGAGCCCTGGAACA
                        |                   |
D58-BE4        TGGGCTCCGGCCCCGGGGGTTAACCCGGAGGATATTGACTTGGAGGAGAGCCCTGGAACA
               ********* ****************** ****************************

D58-BG7        GTAACTTACATGAAAAATCCAATACAAGCTATTCCAACTCCAAGATTGCCTGCACACTTG
                                                      |
D58-AB1        GTAACTTACATGAAAAATCCAATACAAGCTATTCCTACTCCAAGATTGCCTGCACACTTG]
                          |||||||||||||||||||||||||||||||||||||||||||||||||
D58-BE4        GTAACTTACATGA-----------------------------------------------
               *************

D58-BG7        TATGGACGTGTGCCAGTGGATATGTAA

D58-AB1        TATGGACGTGTGCCAGTGGATATGTAA
               ||||||||||||||||||||||||||
D58-BE4        ---------------------------
```

PERCENT IDENTITY OF GROUP 1

	D58-BG7	D58-BE4	D58-AB1	
D58-BG7	***	96.2	98.1	SEQ ID No 1
D58-BE4		***	94.0	SEQ ID No 7
D58-AB1			***	SEQ ID No 3

ALIGNMENT OF GROUP 2

```
D56-AH7        GAAGGATTGGCTGTTCGAATGGTTGCCTTGTCATTGGGATGTATTATTCAATGTTTTGAT   SEQ ID No 9
                          |               |                        |
D13a-5         GAAGGATTGGCTATTCGAATGGTTGCATTGTCATTGGGATGTATTATTCAATGCTTTGAT   SEQ ID No 11
               ************ ************** *************************** ******

D56-AH7        TGGCAACGAATCGGCGAAGAATTGGTTGATATGACTGAAGGAACTGGACTTACTTTGCCT
                          ||| |  |         |
D13a-5         TGGCAACGACTTGGGGAAGGATTGGTTGATAAGACTGAAGGAACTGGACTTACTTTGCCT
               ********* * ** **** ********** ***************************

D56-AH7        AAAGCTCAACCTTTGGTGGCCAAGTGTAGCCCACGACCTAAAATGGCTAATCTTCTCTCT
                            |                           |                 |
D13a-5         AAAGCTCAACCTTTAGTGGCCAAGTGTAGCCCACGACCTATAATGGCTAATCTTCTTTCT
               ************** ************************ ************** ***

D56-AH7        CAGATTTGA

D13a-5         CAGATTTGA
               *********
```

PERCENT IDENTITY OF GROUP 2

	D56-AH7	D13a-5	
D56-AH7	***	93.7	SEQ ID No 9
D13a-5		***	SEQ ID No 11

FIGURE 150: COMPARISON OF SEQUENCE GROUPS

ALIGNMENT OF GROUP 3

```
D56-AG10      ATAGGTTTTGCGACTTTAGTGACACATCTGACTTTTGGTCGCTTGCTTCAAGGTTTTGAT   SEQ ID No 13
                   |
D35-33        ATAGGCTTTGCGACTTTAGTGACACATCTGACTTTTGGTCGCTTGCTTCAAGGTTTTGAT   SEQ ID No 15
                 |||
D34-62        ATAAATTTTGCGACTTTAGTGACACATCTGACTTTTGGTCGCTTGCTTCAAGGTTTTGAT   SEQ ID No 17
              ***  ***********************************************************


D56-AG10      TTTAGTAAGCCATCAAACACGCCAATTGACATGACAGAAGGCGTAGGCGTTACTTTGCCT

D35-33        TTTAGTAAGCCATCAAACACGCCAATTGACATGACAGAAGGCGTAGGCGTTACTTTGCCT
                    |                      |
D34-62        TTTAGTACGCCATCAAACACGCCAATAGACATGACAGAAGGCGTAGGCGTTACTTTGCCT
              *******  ******************  *********************************


D56-AG10      AAGGTTAATCAAGTTGAAGTTCTAATTACCCCTCGTTTACCTTCTAAGCTTTATTTATTTTGA
                                                                          ||
D35-33        AAGGTTAATCAAGTTGAAGTTCTAATTACCCCTCGTTTACCTTCTAAGCTTTATTTAT-----
                 |          |             |                          |   ||
D34-62        AAGGTAAATCAAGTGGAAGTTCTAATTAGCCCTCGTTTACCTTCTAAGCTTTATGTATTCTGA
              *****  *******  *************  ************************** ***
```

PERCENT IDENTITY OF GROUP 3

	D56-AG10	D35-33	D34-62	
D56-AG10	***	98.9	95.1	SEQ ID No 13
D35-33		***	94.4	SEQ ID No 15
D34-62			***	SEQ ID No 17

ALIGNMENT OF GROUP 4

```
D56-AA7       ATTATACTTGCATTGCCAATTCTTGGCATCACTTTGGGACGTTTGGTTCAGAACTTTGAG
                                              |
D56-AE1       ATTATACTTGCATTGCCAATTCTTGGCATTACTTTGGGACGTTTGGTTCAGAACTTTGAG
                  |      |                   |          |     |
D185-BD3      ATTATCCTTGCACTGCCAATTCTTGGCATTACCTTGGGACGCTTGGTGCAGAACTTTGAG
              *****  ******  *****************  **  *******  *****  ***********


D56-AA7       CTGTTGCCTCCTCCAGGCCAGTCGAAGCTCGACACCACAGAGAAAGGTGGACAGTTCAGT

D56-AE1       CTGTTGCCTCCTCCAGGCCAGTCGAAGCTCGACACCACAGAGAAAGGTGGACAGTTCAGT
              |              |   |    |    |         |         |
D185-BD3      TTGTTGCCTCCTCCAGGACAGTCAAAGCTTGACACAACAGAGAAAGGCGGGCAATTCAGT
              ***************** *****  ***** *****  ********** ** ** ******


D56-AA7       CTCCACATTTTGAAGCATTCCACCATTGTGTTGAAACCAAGGTCTTTCTGA
                 |
D56-AE1       CTCCATATTTTGAAGCATTCCACCATTGTGTTGAAACCAAGGTCTTGCTGA
              |    |                             |          | |||
D185-BD3      CTGCACATTTTGAAGCATTCCACCATTGTGATGAAACCAAGATCTTTTTAA
              ** **  ************************** **********  ****  *  *
```

PERCENT IDENTITY OF GROUP 4

	D56AA7	D56-AE1	D185-BD3	
D56AA7	***	98.2	87.7	SEQ ID No 19
D56-AE1		***	87.1	SEQ ID No 21
D185-BD3			***	SEQ ID No 143

FIGURE 150: COMPARISON OF SEQUENCE GROUPS

ALIGNMENT OF GROUP 5

```
D56A-AB6   ATTGCACTTGGGGTTGCATCCATGGAACTTGCTTTGTCAAATCTTCTTTATGCATTTGAT   SEQ ID No 27
                           |               |
D35-BB7    ATTGCACTTGGGGTTGCATCAATGGAACTTGCATTGTCAAATCTTCTTTATGCATTTGAT   SEQ ID No 23
                           |               |
D177-BA7   ATTGCACTTGGGGTTGCATCCATGGAACTTGCTTTGTCAAATCTTCTTTATGCATTTGAT   SEQ ID No 25

D144-AE2   ATTGCACTTGGGGTTGCATCCATGGAACTTGCTTTGTCAAATCTTCTTTATGCATTTGAT   SEQ ID No 29
           ******************** ********** ************************

D56A-AB6   TGGGAGTTGCCTTATGGAGTGAAAAAAGAAGACATCGACACAAACGTTAGGCCTGGAATT
                  |    |   |             |               ||
D35-BB7    TGGGAGTTACCTTTTGGAATGAAAAAAGAAGACATTGACACAAACGCCAGGCCTGGAATT
                   ||   |             |                  | |
D177-BA7   TGGGAGTTACCTTACGGAGTGAAAAAAGAAAACATTGACACAAATGTCAGGCCTGGAATT
                  |    |   |             |               |
D144-AE2   TGGGAGTTGCCTTATGGAGTGAAAAAAGAAGACATCGACACAAACGTTAGGCCTGGAATT
           ******* ****   *** *********** **** ******* *  ***********

D56A-AB6   GCCATGCACAAGAAAAACGAACTTTGCCTTGTCCCAAAAAA-TTATTTATAA-----
           |        |                  |    |   |          |     |
D35-BB7    ACCATGCATAAGAAAAACGAACTTTATCTTATCCCTAAAAA-TTATCTATAG-----
                         |                ||
D177-BA7   ACCATGCATAAGAAAAACGAACTTTGCCTTATCCCTAGAAA-TTATCTATAG-----
           |        |                  |    |  |    |   |   ||||||
D144-AE2   GCCATGCACAAGAAAAACGAACTTTGCCTTGTCCCAAAAAAATTATTTATAAATTAT
           *******  *************** *** **** * *** **** ****

D56A-AB6   -----------------------

D35-BB7    -----------------------

D177-BA7   -----------------------
           |||||||||||||||||||||
D144-AE2   ATTGGGACGTGGATCTCATGCTAG
```

PERCENT IDENTITY OF GROUP 5

	D56A-AB6	D35-BB7	D144-AE2	D177-BA7	
D56A-AB6	***	90.6	97.1	91.8	SEQ ID No 27
D35-BB7		***	87.7	93.0	SEQ ID No 23
D144-AE2			***	88.9	SEQ ID No 29
D177-BA7				***	SEQ ID No 25

ALIGNMENT OF GROUP 6

```
D56-AG11   ATTTCGTTTGGTTTAGCTAATGCTTATTTGCCATTGGCTCAATTACTTTATCACTTTGAT
                  |                                     |         |
D179-AA1   ATTTCGTTTGGCTTAGCTAATGCTTATTTGCCATTGGCTCAATTACTATATCACTTCGAT
           ********** ***************************** ******* ***

D56-AG11   TGGGAACTCCCCACTGGAATCAAACCAAGCGACTTGGACTTGACTGAGTTGGTTGGAGTA
                  |        ||       |
D179-AA1   TGGAAACTCCCTGCTGGAATCGAACCAAGCGACTTGGACTTGACTGAGTTGGTTGGAGTA
           *** *******   *******   ******* ****************************

D56-AG11   ACTGCCGCTAGAAAAAGTGACCTTTACTTGGTTGCGACTCCTTATCAACCTCCTCAAAACTGA
                                                                      |
D179-AA1   ACTGCCGCTAGAAAAAGTGACCTTTACTTGGTTGCGACTCCTTATCAACCTCCTCAAAAGTGA
           ******************************************************** ***
```

FIGURE 150: COMPARISON OF SEQUENCE GROUPS

PERCENT IDENTITY OF GROUP 6

	SEQ ID No 31 D56-AG11	SEQ ID No 33 D179-AA1	
D56-AG11	***	95.6	SEQ ID No 31
D179-AA1	.	***	SEQ ID No 33

ALIGNMENT OF GROUP 7

```
D56-AC7      ATGCTATTTGGTTTAGCTAATGTTGGACAACCTTTAGCTCAGTTACTTTATCACTTCGAT   SEQ ID No 35

D144-AD1     ATGCTATTTGGTTTAGCTAATGTTGGACAACCTTTAGCTCAGTTACTTTATCACTTCGAT   SEQ ID No 37
             ************************************************************

D56-AC7      TGGAAACTCCCTAATGGACAAAGTCATGAGAATTTCGACATGACTGAGTCACCTGGAATT
                                    |   || |
D144-AD1     TGGAAACTCCCTAATGGACAAACTCACCAAAATTTCGACATGACTGAGTCACCTGGAATT
             ********************  ***   * *******************************

D56-AC7      TCTGCTACAAGAAAGGATGATCTTGTTTTGATTGCCACTCCTTATGATTCTTATTAA
                                     |                     || |
D144-AD1     TCTGCTACAAGAAAGGATGATCTTATTTTGATTGCCACTCCTGCTCATTCTTGA
             ************************ ****************  * ******
```

PERCENT IDENTITY OF GROUP 7

	D144-AD1	D56-AC7	
D144-AD1	***	94.3	SEQ ID No 37
D56-AC7F		***	SEQ ID No 35

ALIGNMENT OF GROUP 9

```
D181-AB5     ATGTCGTTTGGTTTAGTTAACACTGGGCATCCTTTAGCTCAGTTGCTCTATTTCTTTGAC   SEQ ID No 41
                              |                   |              |
D73-AC9      ATGTCGTTTGGTTTAGTTAACACAGGGCATCCTTTAGCCCAGTTGCTCTATTGCTTTGAC   SEQ ID No 43
             **********************  **************  ************* ******

D181-AB5     TGGAAATTCCCTCATAAGGTTAATGCAGCTGATTTTCACACTACTGAAACAAGTAGAGTT
                  |    |  ||   |            ||       |
D73-AC9      TGGAAACTCCCTGACAAGGTTAATGCAAATGATTTTCGCACTACTGAAACAAGTAGAGTT
             ****** ***** * ************  *******  *************************

D181-AB5     TTTGCAGCAAGCAAAGATGACCTCTACTTGATTCCAACAAATCACATGGAGCAAGAGTAG
                                                    |         |            |
D73-AC9      TTTGCAGCAAGCAAAGATGACCTCTACTTGATTCCCACAAATCACAGGGAGCAAGAATAG
             ***********************************  **********  ********* ***
```

PERCENT IDENTITY OF GROUP 9

	D181-AB5	D73-AC9	
D181-AB5	***	92.8	SEQ ID No 41
D73-AC9		***	SEQ ID No 43

FIGURE 150: COMPARISON OF SEQUENCE GROUPS

__ALIGNMENT OF GROUP 11__

D58-AB9	ATGACTTATGCATTGCAAGTGGAACACCTAACAATGGCACATTTGATCCAGGGTTTCAAT	SEQ ID No 47
D56-AG9	ATGACTTATGCATTGCAAGTGGAACACCTAACAATGGCACATTTAATCCAGGGTTTCAAT	SEQ ID No 49
D35-BG11	ATGACTTATGCATTGCAAGTGGAACACTTAACAATGGCACATTTGATCCAAGGTTTCAAT	SEQ ID No 53
D34-25	ATGACTTATGCATTACAAGTGGAACACCTAACAATAGCACATTTGATCCAGGGTTTCAAT	SEQ ID No 63
D35-BA3	ATGACTTATGCATTGCAAGTGGAACACTTAACAATGGCACATTTGATCCAAGGTTTCAAT	SEQ ID No 57
D34-52	ATGACTTATGCATTACAAGTGGAACACCTAACAATAGCACATTTGATCCAGGGTTTCAAT	SEQ ID No 61
D56-AG6	ATGACTTATGCATTGCAAGTGGAACACCTAACAATGGCACATTTAATCCAGGGTTTCAAT	SEQ ID No 51
D35-42	ATGACTTATGCATTGCAAGTGGAACACTTAACAATGGCACATTTGATCCAAGGTTTCAAT	SEQ ID No 55
D34-57	ATGACTTATGCATTACAAGTGGAACACCTAACAATAGCACATTTGATCCAGGGTTTCAAT	SEQ ID No 59

```
           ************** ********** ****** ******* ***** ********
```

D58-AB9	TACAGAACTCCAACTGATGAGCCCTTGGATATGAAAGAAGGTGCAGGCATAACTATACGT
D56-AG9	TACAAAACTCCAAATGACGAGGCCTTGGATATGAAGGAAGGTGCAGGCATAACTATACGT
D35-BG11	TACAGAACTCCAAATGACGAGCCCTTGGATATGAAGGAAGGTGCAGGCATAACTATACGT
D34-25	TACAAAACTCCAAATGACGAGCCCCTGGATATGAAGGAAGGTGCAGGATTAACTATACGT
D35-BA3	TACAGAACTCCAAATGACGAGCCCTTGGATATGAAGGAAGGTGCAGGCATAACTATACGT
D34-52	TACAAAACTCCAAATGACGAGCCCTTGGATATGAAGGAAGGTGCAGGATTAACTATACGT
D56-AG6	TACAAAACTCCAAATGACGAGGCCTTGGATATGAAGGAAGGTGCAGGCATAACAATACGT
D35-42	TACAGAACTCCAAATGACGAGCCCTTGGATATGAAGGAAGGTGCAGGCATAACTATACGT
D34-57	TACAAAACTCCAAATGACGAGCCCTTGGATATGAAGGAAGGTGCAGGATTAACCATACGT

```
           **** ******** *** *** ** ********* ********** **** ******
```

D58-AB9	AAGGTAAATCCTGTGAAAGTGATAATTACGCCTCGCTTGGCACCTGAGCTTTATTAA
D56-AG9	AAGGTAAATCCTGTGGAACTGATAATAGCGCCTCGCCTGGCACCTGAGCTTTATTAA
D35-BG11	AAGGTAAATCCTGTGGAACTGATAATAGCGCCTCGCCTGGCACCTGAGCTTTATTAA
D34-25	AAAGTAAATCCTGTAGAAGTGACAATTACGGCTCGCCTGGCACCTGAGCTTTATTAA
D35-BA3	AAGGTAAATCCTGCGGAACTGATAATAGCGCCTCGCCTGGCACCTGAGCTTTATTAA
D34-52	AAAGTAAATCCTGTAGAAGTGACAATTACGGCTCGCCTGGCACCTGAGCTTTATTAA
D56-AG6	AAGGTAAATCCAGTGGAATTGATAATAACGCCTCGCTTGGCACCTGAGCTTTACTAA
D35-42	AAGGTAAATCCTGTGGAACTGATAATAGCGCCCC---TGGCACCTGAGCTTTATTAA
D34-57	AAAGTAAATCCTGTAGAAGTGACAACTACGGCTCGCCTGGCACCTGAGCTTTATTAA

```
           ** ******** *   ** *** **    ** * *   *************** ***
```

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FIGURE 150: COMPARISON OF SEQUENCE GROUPS

PERCENT IDENTITY OF GROUP 11

	D58-AB9	D56-AG9	D56-AG6	D35-BG11	D35-42	D35-BA3	D34-57	D34-52	D34-25	
D58-AB9	***	93.8	93.2	94.3	90.8	93.2	90.9	92.0	91.5	SEQ ID No 47
D56-AG9		***	96.6	97.2	94.2	96.6	91.5	92.6	92.0	SEQ ID No 49
D56-AG6			***	93.8	90.2	92.6	90.3	90.9	90.3	SEQ ID No 51
D35-BG11				***	97.1	99.4	90.9	92.0	91.5	SEQ ID No 53
D35-42					***	96.5	87.3	88.4	87.9	SEQ ID No 55
D35-BA3						***	90.3	91.5	90.9	SEQ ID No 57
D34-57							***	98.9	98.3	SEQ ID No 59
D34-52								***	99.4	SEQ ID No 61
D34-25									***	SEQ ID No 63

ALIGNMENT OF GROUP 14

```
D177-BD7    ATTAATTTTTCAATACCACTTGTTGAGCTTGCACTTGCTAATCTATTGTTTCATTATAAT   SEQ ID No 83

D177-BD5    ATTAATTTTTCAATACCACTTGTTGAGCTTGCACTTGCTAATCTATTGTTTCATTATAAT   SEQ ID No 69
            ************************************************************

D177-BD7    TGGTCACTTCCTGAGGGGATGCTACCTAAGGATGTTGATATGGAAGAAGCTTTGGGGATT
                          |          |
D177-BD5    TGGTCACTTCCTGAAGGGATGCTAGCTAAGGATGTTGATATGGAAGAAGCTTTGGGGATT
            ************* ******** *************************************

D177-BD7    ACCATGCACAAGAAATCTCCCCTTTGCTTAGTAGCTTCTCATTATAACTTGTTGTGA
                                                         |       |||
D177-BD5    ACCATGCACAAGAAATCTCCCCTTTGCTTAGTAGCTTCTCATTATA-CTTGTTGA--
            **********************************************  ******
```

PERCENT IDENTITY OF GROUP 14

	D177-BD7	D177-BD5	
D177-BD7	***	96.0	SEQ ID No 83
D177-BD5		***	SEQ ID No 69

ALIGNMENT OF GROUP 15

```
D56A-AG10   ATGCAACTTGGGCTTTATGCATTGGAAATGGCTGTGGCCCATCTTCTTCATTGTTTTACT   SEQ ID No 71

D58-AD12    ATGCAACTTGGGCTTTATGCATTGGAAATGGCTGTGGCCCATCTTCTTCATTGTTTTACT   SEQ ID No 75
                                  |          |        |          |   |
D58-BC5     ATGCAACTTGGGCTTTATGCATTAGAAATGGCAGTGGCCCATCTTCTTCTTTGCTTTACT   SEQ ID No 73
            ********************** ******* ***************** *** ******

D56A-AG10   TGGGAATTGCCAGATGGTATGAAACCAAGTGAGCTTAAAATGGATGATATTTTTGGACTC

D58-AD12    TGGGAATTGCCAGATGGTATGAAACCAAGTGAGCTTAAAATGGATGATATTTTTGGACTC

D58-BC5     TGGGAATTGCCAGATGGTATGAAACCAAGTGAGCTTAAAATGGATGATATTTTTGGACTC
            ************************************************************

D56A-AG10   ACTGCTCCAAAAGCTAATCGACTCGTGGCTGTGCCTACTCCACGTTTGTTGTGTCCCCTT
                          |
D58-AD12    ACTGCTCCAAGAGCTAATCGACTCGTGGCTGTGCCTACTCCACGTTTGTTGTGTCCCCTT
                                                   |          |  |
D58-BC5     ACTGCTCCAAGAGCTAATCGACTCGTGGCTGTGCCTAGTCCACGTTTGTTGTGCCCACTT
            ********* ****************************** *********** ** ***
```

FIGURE 150:   COMPARISON OF SEQUENCE GROUPS

```
D56A-AG10      TATTA.

D58-AD12       TATTAA

D58-BC5        TATTAA
               ******
```

PERCENT IDENTITY OF GROUP 15

	D56A-AG10	D58-AD12	D58-BC5	
D56A-AG10	***	99.5	95.7	SEQ ID No 71
D58-AD12		***	96.2	SEQ ID No 75
D58-BC5			***	SEQ ID No 73

ALIGNMENT OF GROUP 16

```
D56-AD6     ATGCTTTGGAGTGCGAGTATAGTGCGCGTCAGCTACCTAACTTGTATTTATAGATTCCAA  SEQ ID No 87

D56-AC11    ATGCTTTGGAGTGCGAGTATAGTGCGCGTCAGCTACCTAACTTGTATTTATAGATTCCAA  SEQ ID No 77

D35-39      ATGCTTTGGAGTGCGAGTATAGTGCGCGTCAGCTACCTAACTTGTATTTATAGATTCCAA  SEQ ID No 79
                                                        |
D58-BH4     ATGCTTTGGAGTGCGAGTATAGTGCGCGTCAGCTACCTAACCTGTATTTATAGATTCCAA  SEQ ID No 81
            **************************************** ****************


D56-AD6     GTATATGCTGGGTCTGTGTCCAGAGTAGCATGA
                               |
D56-AC11    GTATATGCTGGGTCTGTGTTCAGAGTAGCATGAD35-39
GTATATGCTGGGTCTGTGTTCAGAGTAGCATGA

D58-BH4     GTATATGCTGGGTCTGTGTTCAGAGTAGCATGA
            ******************* *************
```

PERCENT IDENTITY OF GROUP 16

	D56-AC11	D56-AD6	D58-BH4	D35-39	
D56-AC11	***	98.7	98.7	98.7	SEQ ID No 77
D56-AD6		***	98.7	98.7	SEQ ID No 87
D58-BH4			***	98.7	SEQ ID No 81
D35-39				***	SEQ ID No 79

ALIGNMENT OF GROUP 17

```
D73A-AD6    CTGAATTTTGCAATGTTAGAGGCAAAAATGGCACTTGCATTGATTCTACAACACTATGCT  SEQ ID No 89

D70A-BA11   CTGAATTTTGCAATGTTAGAGGCAAAAATGGCACTTGCATTGATTCTACAACACTATGCT  SEQ ID No 91
            ************************************************************

D73A-AD6    TTTGAGCTCTCTCCATCTTATGCACATGCTCCTCATACAATTATCACTCTGCAACCTCAA
                                      |
D70A-BA11   TTTGAGCTCTCTCCATCTTATGCACACGCTCCTCATACAATTATCACTCTGCAACCTCAA
            ************************** *********************************

D73A-AD6    CATGGTGCTCCTTTGATTTTGCGCAAGCTGTAG

D70A-BA11   CATGGTGCTCCTTTGATTTTGCGCAAGCTGTAG
            *********************************
```

FIGURE 150: COMPARISON OF SEQUENCE GROUPS

PERCENT IDENTITY OF GROUP 17

```
            D73A-AD  70A-BA11
D73A-AD6    ***      99.3      SEQ ID No 89
D70A-BA11            ***       SEQ ID No 91
```

ALIGNMENT OF GROUP 18

D70A-AB5   CAAAACTTCGCGATTTTGGAAGCAAAAATGGCTATAGCTATGATTCTACAACGCTTCTCC   SEQ ID No 95

D70A-AA8   CAAAACTTCGCGATTTTGGAAGCAAAAATGGCTATAGCTATGATTCTACAACGCTTCTCC   SEQ ID No 97
                ****

D70A-AB5   TTCGAGCTCTCCCCATCTTATACACACTCTCCATACACTGTGGTCACTTTGAAACCCAAA
                                              |
D70A-AA8   TTCGAGCTCTCTCCATCTTATACACACTCTCCATACACTGTGGTCACTTTGAAACCCAAA
                *************************** ********************************

D70A-AB5   TATGGTGCTCCCCTAATAATGCACAGGCTGTAG
D70A-AA8   TATGGTGCTCCCCTAATAATGCACAGGCTGTAG
                ****

PERCENT IDENTITY OF GROUP 18

```
            D70A-AB5    D70A-AA8
D70A-AB5    ***         99.6      SEQ ID No 95
D70A-AA8                ***       SEQ ID No 97
```

ALIGNMENT OF GROUP 19

D70A-AB8   CAAAATTTTGCCATGTTAGAAGCAAAGATGGCTCTGTCTATGATCCTGCAACGCTTCTCT   SEQ ID No 99
                || | | | || | | | | | | | || | |
D70A-BH2   ATAAACTTTGCAATGACAGAAGCGAAGATGGCTATGGCTATGATTCTGCAACGCTTCTCC   SEQ ID No 101
                            |
D70A-AA4   ATAAACTTTGCAATGGCAGAAGCGAAGATGGCTATGGCTATGATTCTGCAACGCTTCTCC   SEQ ID No 103
                *** ***** *** ****** ****   ** ** ******* ** ***********

D70A-AB8   TTTGAACTGTCTCCGTCTTATGCACATGCCCCTCAGTCCATATTAACCGT-CAGCCACAA
                   | | | | | | | | || | |
D70A-BH2   TTTGAGCTATCTCCATCTTACACACATGCTCCACAGTCTGTAATAACTATGCAACCCCAA

D70A-AA4   TTTGAGCTATCTCCATCTTACACACATGCTCCACAGTCTGTAATAACTATGCAACCCCAA
                ***** ** ***** *****   ******* ** ***** ** **** * ** ** **

D70A-AB8   TATGGTGCTCCACTTATTTTCCACAAGCTATAA
                           | | | | || |
D70A-BH2   TATGGTGCTCCTCTTATATTGCACAAATTGTAA
D70A-AA4   TATGGTGCTCCTCTTATATTGCACAAATTGTAA
                ********** ***** ** ** ** * **

PERCENT IDENTITY OF GROUP 19

```
            D70A-AB8    D70A-AA4    D70A-BH2
D70A-AB8    ***         77.8        77.8       SEQ ID No 99
D70A-AA4                ***         99.3       SEQ ID No 101
D70A-BH2                            ***        SEQ ID No 103
```

ALIGNMENT OF GROUP 20

D70A-BA1   CAAAACTTTGCAATGATGGAAGCAAAAATGGCAGTAGCTATGATACTACAAAAATTTTCC   SEQ ID No 105

FIGURE 150: COMPARISON OF SEQUENCE GROUPS

```
                                                                    |
D70A-BA9    CAAAACTTTGCAATGATGGAAGCAAAAATGGCAGTAGCTATGATACTACATAAATTTTCC   SEQ ID No 107
            ***************************************************** ********

D70A-BA1    TTTGAACTATCCCCTTCTTATACACATGCTCCATTTGCAATTGTGACTATTCATCCTCAG

D70A-BA9    TTTGAACTATCCCCTTCTTATACACATGCTCCATTTGCAATTGTGACTATTCATCCTCAG
            ***********************************************************

D70A-BA1    TATGGTGCTCCTCTGCTTATGCGCAGACTTTAA

D70A-BA9    TATGGTGCTCCTCTGCTTATGCGCAGACTTTAA
            *********************************
```

PERCENT IDENTITY OF GROUP 20

```
            D70A-BA1        D70A-BA9
D70A-BA1    ***            99.4              SEQ ID No 105
D70A-BA9                   ***               SEQ ID No 107
```

ALIGNMENT OF GROUP 22

```
D144-AH1    TATAGCTTGGGGGCTCAAGGAGATTCAAGCTAGCTTAGCTAATCTTCTACATGGATTTAAC   SEQ ID No 113
            |                      |
D34-65      CATAGCTTGGGGGCTCAAGGTGATTCAAGCTAGCTTAGCTAATCTTCTACATGGATTTAAC   SEQ ID No 115
            |   |                  |
D181-AC5    TATAGCATGGGGGCTCAAGGCGATTCAAGCTAGCTTAGCTAATCTTCTACATGGATTTAAC   SEQ ID No 111
            ***** :************** ***************************************

D144-AH1    TGGTCATTGCCTGATAATATGACTCCTGAGGACCTCAACATGGATGAGATTTTTGGGCTC

D34-65      TGGTCATTGCCTGATAATATGACTCCTGAGGACCTCAACATGGATGAGATTTTTGGGCTC

D181-AC5    TGGTCATTGCCTGATAATATGACTCCTGAGGACCTCAACATGGATGAGATTTTTGGGCTC
            ***********************************************************

D144-AH1    TCTACACCTAAAAAATTTCCACTTGCTACTGTGATTGAGCCAAGACTTTCACCAAAACTT

D34-65      TCTACACCTAAAAAATTTCCACTTGCTACTGTGATTGAGCCAAGACTTTCACCAAAACTT

D181-AC5    TCTACACCTAAAAAATTTCCACTTGCTACTGTGATTGAGCCAAGACTTTCACCAAAACTT
            ***********************************************************

D144-AH1    TACTCTGTTTGA

D34-65      TACTCTGTTTGA

D181-AC5    TACTCTGTTTGA
            ************
```

PERCENT IDENTITY OF GROUP 22

```
            D34-65         D181-AC5       D144-AH1
D34-65      ***            98.4           99.0       SEQ ID No 115
D181-AC5                   ***            99.0       SEQ ID No 111
D144-AH1                                  ***        SEQ ID No 113
```

ALIGNMENT OF GROUP 25

```
D58-AA1     TTGGGCTTGGCAACGGTGCATGTGAATTTGATGTTGGCCCGAATGATTCAAGAATTTGAA   SEQ ID No 121
                                                     |
D185-BC1    TTGGGCTTGGCAACGGTGCATGTGAATTTGATGTTGGCCCGAACGATTCAAGAATTTGAA   SEQ ID No 133
```

FIGURE 150:   COMPARISON OF SEQUENCE GROUPS

```
                                             |
D185-BG2      TTGGGCTTGGCAACGGTGCATGTGAATTTGATGTTGGCCCGAATGATTCAAGAATTTGAA  SEQ ID No 135
              ****************************************** ***************

D58-AA1       TGGTCCGCTTACCCGGAAAATAGGAAAGTGGATTTTACTGAGAAATTGGAATTTACTGTG

D185-BC1      TGGTCCGCTTACCCGGAAAATAGGAAAGTGGATTTTACTGAGAAATTGGAATTTACTGTG
                                                    |
D185-BG2      TGGTCCGCTTACCCGGAAAATAGGAAAGTGGATTT-ACTGAGAAATTGGAATTTACTGTG
              ******************************** **************************

D58-AA1       GTGATGAAAAATCCTTTAAGAGCTAAGGTCAAGCCAAGAATGCAAGTGGTGTAA
                             |
D185-BC1      GTGATGAAAAACCCTTTAAGAGCTAAGGTCAAGCCAAGAATGCAAGTGGTGTAA
              |||||||||||| |||||||||||||||||||||||||||||||| ||||||||||||
D185-BG2      GTGA---------------------------------------------------------
              ****
```

PERCENT IDENTITY OF GROUP 25

	D58-AA1	D185-BG2	D185-BC1	
D58-AA1	***	95.9	98.9	SEQ ID No 121
D185-BG2		***	95.1	SEQ ID No 135
D185-BC1			***	SEQ ID No 133

ALIGNMENT OF GROUP 28

```
D177-BF7      ATCACATTTGCTAAGTTTGTGAATGAGCTAGCATTGGCAAGATTAATGTTCCATTTTGAT  SEQ ID No 127

D185-BD2      ATCACATTTGCTAAGTTTGTGAATGAGCTAGCATTGGCAAGATTAATGTTCCATTTTGAT  SEQ ID No 139

D185-BE1      ATCACATTTGCTAAGTTTGTGAATGAGCTAGCATTGGCAAGATTAATGTTCCATTTTGAT  SEQ ID No 137
              ************************************************************

D177-BF7      TTCTCGCTACCAAAAGGAGTTAAGCATGAGGATTTGGACGTGGAGGAAGCTGCTGGAATT
                                                   |
D185-BD2      TTCTCGCTACCAAAAGGAGTTAAGCATGCGGATTTGGACGTGGAGGAAGCTGCTGGAATT
                                                   |
D185-BE1      TTCTCGCTACCAAAAGGAGTTAAGCATGAGGATTTGGACGTGGAGGAAGCTGCTGGAATT
              *************************** ********************************

D177-BF7      ACTGTTAGAAGGAAGTTCCCCCTTTTAGCCGTCGCCACTCCATGCTCGTGA

D185-BD2      ACTGTTAGAAGGAAGTTCCCCCTTTTAGCCGTCGCCACTCCATGCTCGTGA
                        |
D185-BE1      ACTGTTAGGAGGAAGTTCCCCCTTTTAGCCGTCGCCACTCCATGCTCGTGA
              ******* *******************************************
```

PERCENT IDENTITY OF GROUP 28

	D177-BF7	D185-BD2	D185-BE1	
D177-BF7	***	99.4	99.4	SEQ ID No 127
D185-BD2		***	98.8	SEQ ID No 139
D185-BE1			***	SEQ ID No 137

ALIGNMENT OF GROUP 30

```
D70A-AA12     ATGTCATTTGGTTTAGCTAATCTTTACTTACCATTGGCTCAATTACTCTATCACTTTGAC  SEQ ID No 131
              |       |       | |    |  | |   |  |       ||| |     |      |
D176-BF2      ATATCATTTGGTTTGGCTAATGTTTATTTGCCACTAGCTCAATTGTTATATCATTTTGAT  SEQ ID No 85
```

FIGURE 150: COMPARISON OF SEQUENCE GROUPS

```
          ** ********** ****** **** ** *** * ******* * ***** *****

D70A-AA12    TGGAAACTCCCAACCGGAATCAAGCCAAGAGACTTGGACTTGACCGAATTATCGGGAATA
                   |  |          ||      |          |    |   | ||  |      |
D176-BF2     TGGAAACTCCCTACTGGAATCAATTCAAGTGACTTGGACATGACTGAGTCGTCAGGAGTA
             ********** ** ******** **** ******** **** ** *  ** *** **


D70A-AA12    ACTATTGCTAGAAAGGGTGACCTTTACTTAAATGCTACTCCTTATCAACCTTCTCGAGAGTAA
               ||                |      || |      | |            |       |       |
D176-BF2     ACTTGTGCTAGAAAGAGTGATTTATACTTGACTGCTACTCCATATCAACTTTCTCAAGAGTGA
             ***  ********** ****  * ***** * ********  ******* ***** ***** *
```

PERCENT IDENTITY OF GROUP 30

	D176-BF2	D70A-AA12		
D176-BF2	***	77.0	SEQ ID No	85
D70A-AA12		***	SEQ ID No	131

FIGURE 151A: Alignment of Full Length Clones

Column domains: ExxRxxP ... FxPERF ... GxRxC

GROUP 1

Clone										SEQ. ID. No.
D208-AD9 98.8	EVLRLYPPGP	LLVPHENVED	CVVSGYHIPK	GTRLFANVMK	LQRDPKLWSD	PDTFDPERFI	ATDIDFRGQY	YKYIPFGPGR	RSC	297
D120-AH4 97.6	EVLRLYPPGP	LLVPHENVED	CVVSGYHIPK	GTRLFANVMK	LLRDPKLWPD	PDTFDPERFI	ATDIDFRGQY	YKYIPFGSGR	RSC	298
D121-AA8 91.6	EVLRLYPPGP	LLVPHENVED	CVVSGYHIPK	GTRLFANVMK	LQRDPKLWSD	PDTFDPERFI	ATDIDFRGQY	YKYIPFGSGR	RSC	299
D122-AF10 91.6	EVLRLYPPGP	LLVPHENVED	CVVSGYHIPK	GTRLFANVMK	LQRDPKLWSN	PDKFDPERFF	ADDIDYRGQH	YEFIPFGSGR	RSC	3
D103-AH3 98.8	KVLRLYPPGP	LLVPHENVKD	CVVSGYHIPK	GTRLFANVMK	LQRDPKLLSN	PDKFDPERFI	AGDIDFRGHH	YEFIPSGSGR	RSC	30
D208-AC8 98.8	KVLRLYPPGP	LLVPHENVKD	CVVSGYHIPK	GTRLFANVMK	LQRDPKLLSN	PDKFDPERFI	AGDIDFRGHH	YEFIPFGSGR	RSC	302
D235-AB1	KVLRLYPPGP	LLVPHEYVKD	CVVSGYHIPK	GTRLFANVMK	LQRDPKLLSN	PDKFDPERFI	AGDIDFRGHH	YEFIPFGSGR	RSC	303

Column domains: ExxRxxP ... FxPERF ... GxRxC

GROUP 2

Clone										SEQ. ID. No.
D244-AD4 100.0	ETLRLYPPVP	FLLPHEAVQD	CKVTGYHIPK	GTRLYINAWK	VHRDPEIWSE	PEKFMPNRFL	TSKANIDARG	QNFEFIPFGS	GRRSC	304
D244-AB6 98.8	ETLRLYPPVP	FLLPHEAVQD	CKVTGYHIPK	GTRLYINAWK	VHRDPEIWSE	PEKFMPNRFL	TSKANIDARG	QNFEFIPFGS	GRRSC	305
D285-AA8 100.0	ETLRLFPPVP	FLLPHEAVQD	CKVTGYHIPK	GTRLYINAWK	VHRDPEIWSE	PEKFMPNRFL	TSKANIDARG	QNFEFIPFGS	GRRSC	306
D285-AB9 97.6	ETLRLFPPVP	FLLPHEAVQD	CKVTGYHIPK	GTRLYINAWK	VHRDPEIWSE	PEKFMPNRFL	TSKANIDARG	QNFEFIPFGS	GRRSC	307
D268-AE2	ETLRLYPPVP	FLLPHEAVQD	CKVTGYHIPK	GTRLYINAWK	VHRDSEIWSE	PEKFMPNRFL	TSKANIDARG	QNFEFIPFGS	GRRSC	3?

Column domains: ExxRxxP ... FxPERF ... GxRxC

GROUP 3

Clone										SEQ. ID. No.
D100A-AC3 97.6	ETFRMYPAGP	LLVPHESSEE	TTVGGYRVPG	GTMLLVNLWA	IHNDPKLWDE	PRKFKPERFE	GLEGVRDGYK	MMPFGSGRRS	C	309
D100A-BE2	ETFRMYPAGP	LLVPHESSEE	TTVGGYRVPG	GTMLLVNLWA	IHNDPKLWDE	PRKFKPERFQ	GLDGVRDGYK	MMPFGSGRRS	C	310

FIGURE 151B: Alignment of Full Length Clones

GROUP 4

	ExxRxxP					FxPERF		Gx RxC				
D205-BG9 100.0	ETMRLYTPIP	LLLPHYSTKD	CIVEGYDVPK	HTMLFVNAWA	IHRDPKVWEE	PDKFKPERFE	ATEGETERFN	YKLVPFGMGR	RAC	SEQ. ID. No. 311
D205-BE9 100.0	ETMRLYTPIP	LLLPHYSTKD	CIVEGYDVPK	HTMLFVNAWA	IHRDPKVWEE	PDKFKPERFE	ATEGETERFN	YKLVPFGMGR	RAC	SEQ. ID. No. 312
D205-AH4	ETMRLYTPIP	LLLPHYSTKD	CIVEGYDVPK	HTMLFVNAWA	IHRDPKVWEE	PDKFKPERFE	ATEGETERFN	YKLVPFGMGR	RAC	SEQ. ID. No. 313

GROUP 5

	ExxRxxP					FxPERF		Gx RxC				
D259-AB9 100.0	ETMRLHPVAP	MLVPRECRED	IKVAGYDVQK	GTRVLVSVWT	IGRDPTLWDE	PEVFKPERFH	EKSIDVKGHD	YELLPFGAGR	RMC	SEQ. ID. No. 314
D257-AE4 98.8	ETMRLHPVAP	MLVPRECRED	IKVAGYDVQK	GTRVLVSVWT	IGRDPTLWDE	PEVFKPERFH	EKSIDVKGHD	YELLPFGAGR	RMC	SEQ. ID. No. 315
D147-AD3	ETMRLHPVAP	MLVPRECRED	IKVAGYDVQK	GTRVLVSVWT	IGRDPTLWDE	PEVFKPERFH	ERSIDVKGHD	YELLPFGAGR	RMC	SEQ. ID. No. 316

GROUP 6

	ExxRxxP					FxPERF		Gx RxC				
D249-AEB 98.8	EALRLHPPTP	LMLPHRASAS	VKIGGYDIPK	GSIVHVNVWA	VARDPAVWKN	PLEFRPERFL	EEDVDMKGHD	YRLLPFGAGR	RVC	SEQ. ID. No. 317
D248-AA6	EALRLHPPTP	LMLPHKASAS	VKIGGYDIPK	GSIVHVNVWA	VARDPAVWKN	PLEFRPERFL	EEDVDMKGHD	YRLLPFGAGR	RVC	SEQ. ID. No. 318

GROUP 7

	ExxRxxP					FxPERF		Gx RxC				
D233-AG7 98.8	ETLRLHPLGT	MLAPHCAIED	CNVAGYDIQK	GTTFLVNVWT	IGRDPKYWDR	AQEFLPERFL	ENDIDMDGHN	FAFLPFGSGR	RRC	SEQ. ID. No. 3
D224-BD11 100.0	ETLRLHPLGT	MLAPHCAIED	CNVAGYDIQK	GTTVLVNVWT	IGRDPKYWDR	AQEFLPERFL	ENDIDMDGHN	FAFLPFGSGR	RRC	SEQ. ID. No. 320
D224-AF10	ETLRLHPLGT	MLAPHCAIED	CNVAGYDIQK	GTTVLVNVWT	IGRDPKYWDR	AQEFLPERFL	ENDIDMDGHN	FAFLPFGSGR	RRC	SEQ. ID. No. 321

GROUP 8

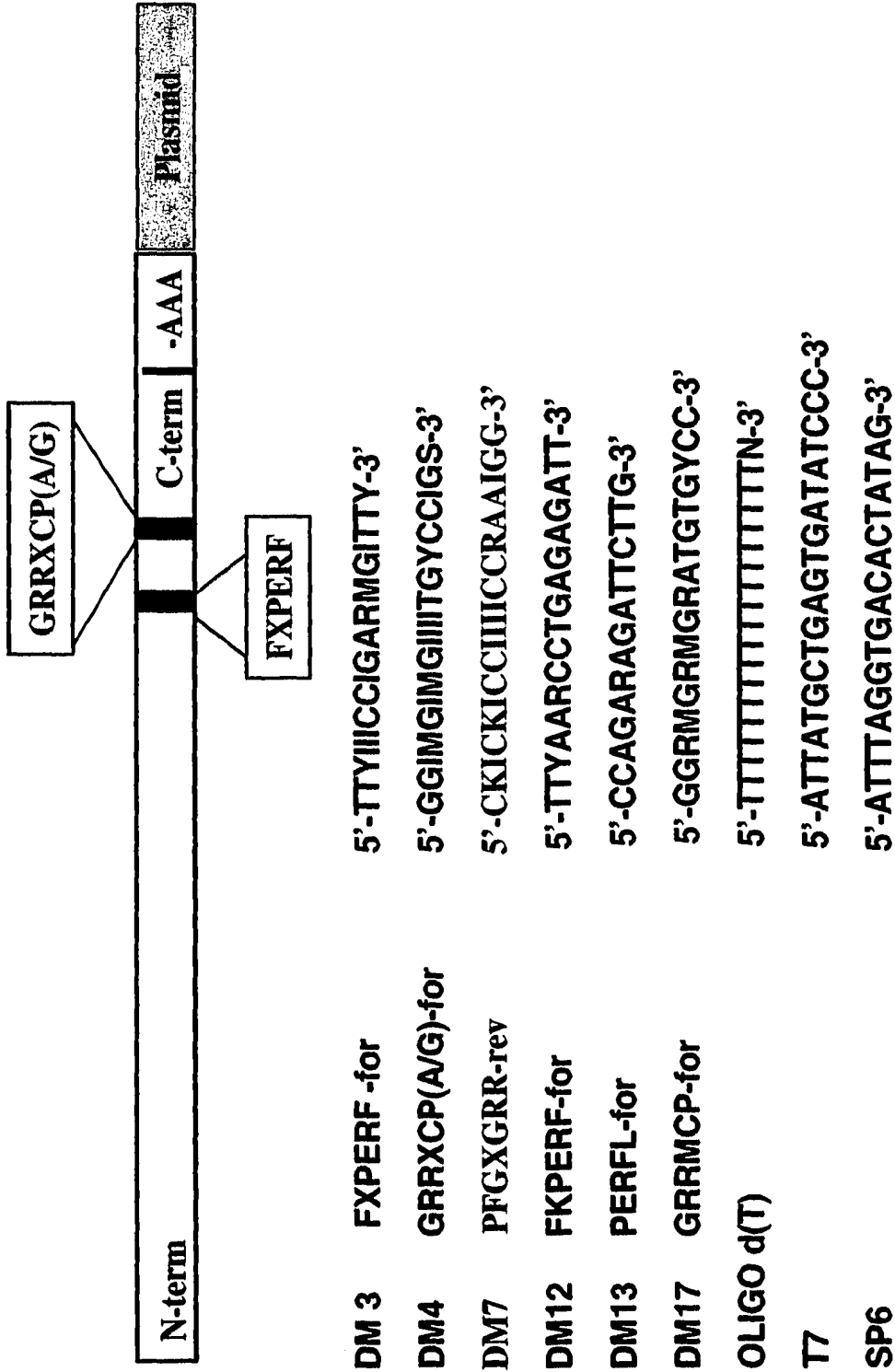|	ExxRxxP					FxPERF		Gx RxC				
D105-AD6 100.0	EVLRLYPAGY	VINRMVNKET	KLGNLCLPAG	VQLVLPTMLL	QHDTEIWGDD	AMEFNPERFS	DGISKATKGK	LVFFPFSWGP	RIC	SEQ. ID. No. 322
D215-AB5 95.2	EVLRLYPAGY	VINRMVNKET	KLGNLCLPAG	VQLVLPTMLL	QHDTEIWGDD	AMEFNPERFS	DGISKATKGK	LVFFPFSWGP	RIC	SEQ. ID. No. 323
D135-AE1	EVLRLYPAGY	AINRMVTKET	KLGNLCLPAG	VQLLLPTILL	QHDTEIWGDD	AMEFNPERFS	DGISKATKGK	LVFFPFSWGP	RIC	SEQ. ID. No. 324

FIGURE 151C: Alignment of Full Length Clones

GROUP 9

```
                   ExxRxxP                                                              FxPERF                          Gx  RxC
D87A-AF3    ESLRLYPPIA TRTRRTNEET KLGELDLPKG ALLFIPTILL HLDKEIWGED ADEFNPERFS EGVAKATKGK MTYFPFGAGP RKC   SEQ. ID. NO. 325
100.0
D210-BD4    ESLRLYPPIA TRTRRTNEET KLGELDLPKG ALLFIPTILL HLDREIWGED ADEFNPERFS EGVAKATKGK MTYFPFGAGP RKC   SEQ. ID. NO. 326
```

GROUP 10

```
                   ExxRxxP                                                              FxPERF                          Gx  RxC
D89-AB1     ETLRMHPPIP LLVPRECMED TKIDGYNIPF KTRVIVNAWA IGRDPESWDD PESFMPERFE NSSIDFLGNH HQFIPFGAGR RIC   SEQ. ID. NO. 32
100.0
D89-AD2     ETLRMHPPIP LLVPRECMED TKIDGYNIPF KTRVIVNAWA IGRDPESWDD PESFMPERFE NSSIDFLGNH HQFIPFGAGR RIC   SEQ. ID. NO. 328
100.0
D163-AG12   ETLRMHPPIP LLVPRECMED TKIDGYNIPF KTRVIVNAWA IGRDPESWDD PESFMPERFE NSSIDFLGNH HQFIPFGAGR RIC   SEQ. ID. NO. 339
98.8
D163-AG11   ETLRMHPPIP LLVPRECMED TKIDGYNIPF KTRVIVNAWA IGRDPQSWDD PESFTPERFE NNSIDFLGNH HQFIPFGAGR RIC   SEQ. ID. NO. 330
100.0
D163-AF12   ETLRMHPPIP LLVPRECMED TKIDGYNIPF KTRVIVNAWA IGRDPQSWDD PESFTPERFE NNSIDFLGNH HQFIPFGAGR RIC   SEQ. ID. NO. 331
```

GROUP 11

```
                   ExxRxxP                                                              FxPERF                          Gx  RxC
D267-AF10   ETLRMHPPVP LLGPRECRDQ TEIDGYTVPI KARVMVNAWA IGRDPESWED PESFKPERFE NTSVDLTGNH YQFIPFGSGR RMC   SEQ. ID. NO. 332
100.0
D96-AC2     ETLRMHPPVP LLGPRECRDQ TEIDGYTVPI KARVMVNAWA IGRDPESWED PESFKPERFE NTSVDLTGNH YQFIPFGSGR RMC   SEQ. ID. NO. 333
100.0
D96-AB6     ETLRMHPPVP LLGPRECRDQ TEIDGYTVPI KARVMVNAWA IGRDPESWED PESFKPERFE NTSVDLTGNH YQFIPFGSGR RMC   SEQ. ID. NO. 3?
96.4
D207-AA5    ETLRMHPPVP LLGPRECREQ TEIDGYTVPL KARVMVNAWA IGRDPESWED PESFKPERFE NISVDLTGNH YQFIPFGSGR RMC   SEQ. ID. NO. 335
100.0
D207-AB4    ETLRMHPPVP LLGPRECREQ TEIDGYTVPL KARVMVNAWA IGRDPESWED PESFKPERFE NISVDLTGNH YQFIPFGSGR RMC   SEQ. ID. NO. 336
100.0
D207-AC4    ETLRMHPPVP LLGPRECREQ TEIDGYTVPL KARVMVNAWA IGRDPESWED PESFKPERFE NISVDLTGNH YQFIPFGSGR RMC   SEQ. ID. NO. 337
```

GROUP 12

```
                   ExxRxxP                                                              FxPERF                          Gx  RxC
D98-AG1     ETLRLHPPTP LLVPRECREE TEIEGFTIPL KSKVLVNVWA IGRDPENWKN PECFIPERFE NSSIEFTGNH FQLLPFGAGR RIC   SEQ. ID. NO. 338
100.0
D98-AA1     ETLRLHPPTP LLVPRECREE TEIEGFTIPL KSKVLVNVWA IGRDPENWKN PECFIPERFE NSSIEFTGNH FQLLPFGAGR RIC   SEQ. ID. NO. 339
```

FIGURE 151D: Alignment of Full Length Clones

GROUP 13

```
                   ExxRxxP                           FxPERF                   Gx RxC
D209-AA10    ETLRLHPPVP LLLPRECREE TNINGYTIPV KTKVMVNVWA LGRDPKYWND AETFMPERFE QCSKDFVGNN FEYLPFGGGR RIC  SEQ. ID. No. 340
100.0
D209-AA12    ETLRLHPPVP LLLPRECREE TNINGYTIPV KTKVMVNVWA LGRDPKYWND AETFMPERFE QCSKDFVGNN FEYLPFGGGR RIC  SEQ. ID. No. 341
100.0
D209-AH10    ETLRLHPPVP LLLPRECREE TNINGYTIPV KTKVMVNVWA LGRDPKYWND AETFMPERFE QCSKDFVGNN FEYLPFGGGR RIC  SEQ. ID. No. 3
100.0
D209-AH12    ETLRLHPPVP LLLPRECREE TNINGYTIPV KTKVMVNVWA LGRDPKYWND AETFMPERFE QCSKDFVGNN FEYLPFGGGR RIC  SEQ. ID. No. 34
97.6
D90a-BB3     ETLRLHPPVP LLLPRECREE TNINGYTIPV KTKVMVNVWA LGRDPKYWDD AETFKPERFE QCSKDFVGNN FEYLPFGGGR RIC  SEQ. ID. No. 344
```

GROUP 14

```
                   ExxRxxP                           FxPERF                   Gx RxC
D129-AD10    ETLRLHPPIP LLLHETAEES TVSGYHIPAK SHVIINSFAI GRDKNSWEDP ETYKPSRFLK EGVPDFKGGN FEFIPFGSGR RSC  SEQ. ID. No. 345
100.0
D104A-AE8    ETLRLHPPIP LLLHETAEES TVSGYHIPAK SHVIINSFAI GRDKNSWEDP ETYKPSRFLK EGVPDFKGGN FEFIPFGSGR RSC  SEQ. ID. No. 346
```

GROUP 15

```
                   ExxRxxP                           FxPERF                   Gx RxC
D228-AH8     EIFRLYPPAP LLVPRESMEK TILEGYEIRP RTIVHVNAWA IARDPEIWEN PDEFIPERFL NSSIDYKGQD FELLPFGAGR RGC  SEQ. ID. No. 347
100.0
D228-AD7     EIFRLYPPAP LLVPRESMEK TILEGYEIRP RTIVHVNAWA IARDPEIWEN PDEFIPERFL NSSIDYKGQD FELLPFGAGR RGC  SEQ. ID. No. 348
100.0
D250-AC11    EIFRLYPPAP LLVPRESMEK TILEGYEIRP RTIVHVNAWA IARDPEIWEN PDEFIPERFL NSSIDYKGQD FELLPFGAGR RGC  SEQ. ID. No. 3
100.0
D247-AH1     EIFRLYPPAP LLVPRESMEK TILEGYEIRP RTIVHVNAWA IARDPEIWEN PDEFIPERFL NSSTDYKGQD FELLPFGAGR RGC  SEQ. ID. No. 350
```

GROUP 16

```
                   ExxRxxP                           FxPERF                                      GxRxC
D128-AB7     EALRLRMAIP LLVPHMNLHD AKLGGFDIPA ESKILVNAWW LANNPAHWKK PEEFRPRERFF EEEKHVEANG NDFRYLPFGV GRRSC  SEQ. ID. No. 351
98.8
D243-AA2     EALRLRMAIP LLVPHMNLHD AKLGGLDIPA ESKILVNAWW LANNPAHWKK PEEFRPRERFF EEEKHVEANG NDFRYLPFGV GRRSC  SEQ. ID. No. 352
97.7
D125-AF11    ETLRLRMAIP LLVPHMNLHD AKLGGFDIPA ESKILVNAWW LANNPAHWKK PEEFRPRERFF EEEKHVEANG NDFRYLPFGV GRRSC  SEQ. ID. No. 353
```

FIGURE 151E: Alignment of Full Length Clones

GROUP 17

```
                 ExxRxxP          FxPERF               Gx RxC
D284-AH5    ESLRLYSPVV SLIRRPNEDA ILGNVSLPEG VLLSLPVILL HHDEEIWGKD -KKFNPERFR DGVSSATKGQ VTFFPFTWGP RIC SEQ. ID. NO. 354
86.7
D110-AF12   ESLRLYPPVV TLTRRPKEDT VLGDVSLPAG VLISLPVILL HHDEEIWGKD AKKFKPERFR DGVSSATKGQ VTFFPFTWGP RIC SEQ. ID. NO. 355
```

Figure 152: Cloning of cytochrome P450 cDNA fragments by PCR

DM 3	FXPERF -for	5'-TTYIIICCIGARMGITTY-3'
DM4	GRRXCP(A/G)-for	5'-GGIMGIMGIIIITGYCCIGS-3'
DM7	PFGXGRR-rev	5'-CKICKICCIIIICCRAAIGG-3'
DM12	FKPERF-for	5'-TTYAARCCTGAGAGATT-3'
DM13	PERFL-for	5'-CCAGARAGATTCTTG-3'
DM17	GRRMCP-for	5'-GGRMGRMGRATGTGYCC-3'
OLIGO d(T)		5'-TTTTTTTTTTTTTTN-3'
T7		5'-ATTATGCTGAGTGATATCCC-3'
SP6		5'-ATTTAGGTGACACTATAG-3'

I = Deoxylnosine; Y = C, T; M = A,C; R = A,G; S = C,G; N = A,T,C,G

FIG. 153
NAME   D425-AB10
ORGANISM   NICOTIANA TABACUM
SEQ ID 356

```
   1 ATGCTTTCTC CCATAGAAGC CATTGTAGGA CTAGTAACCT TCACATTTCT CTTCTTCTTC
  61 CTATGGACAA AAAAATCTCA AAAACCTTCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
 121 TGGCCGGTAA TCGGCCATCT TTTCCACTTC AATGACGACG GCGACGACCG TCCATTAGCT
 181 CGAAAACTCG GAGACTTAGC TGACAAATAC GGCCCCGTTT TCACTTTTCG GCTAGGCCTT
 241 CCCCTTGTCT TAGTTGTAAG CAGTTACGAA GCTGTAAAAG ACTGTTTCTC TACAAATGAC
 301 GCCATTTTTT CCAATCGTCC AGCTTTTCTT TACGGCGATT ACCTTGGCTA CAATAATGCC
 361 ATGCTATTTT TGGCCAATTA CGGACCTTAC TGGCGAAAAA ATCGAAAATT AGTTATTCAG
 421 GAAGTTCTCT CCGCTAGTCG TCTCGAAAAA TTCAAACACG TGAGATTTGC AAGAATTCAA
 481 GCGAGCATTA AGAATTTATA TACTCGAATT GATGGAAATT CGAGTACGAT AAATTTAACT
 541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG ATCGTGAAGA TGATCGCTGA AAAAAATTAT
 601 GAATCCGGTA AAGGAGATGA ACAATTGGAG AGATTTAAGA AAGCGTTTAA GGATTTTATG
 661 ATTTTATCAA TGGAGTTTGT GTTATGGGAT GCATTCCAA TTCCATTATT TAAATGGGTG
 721 GATTTTCAAG GGCATGTTAA GGCTATGAAA AGGACTTTTA AAGATATAGA TTCTGTTTTT
 781 CAGAATTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTAA TGCAGAAGGG
 841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAAATGA GTAATGAATA TCTTGGTGAA
 901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACGGTGTTTA GTTGGTCTT GGATGCAGCA
 961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGGCATTAT TGATAAACAA TCAAAAGGCC
1021 TTGACGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGACAGATG GGTAGAAGAG
1081 AGTGATATTA AGGATTTGGT ATACCTCCAA GCTATTGTTA AGAAGTGTT ACGATTATAT
1141 CCACCAGGAC CTTTGTTAGT ACCACACGAA AATGTAGAAG ATTGTGTTGT TAGTGGATAT
1201 CACATTCCTA AAGGGACAAG ATTATTCGCA AACGTCATGA AACTGCAACG TGATCCTAAA
1261 CTCTGGTCTG ATCCTGATAC TTTCGATCCA GAGAGATTCA TTGCTACTGA TATTGACTTT
1321 CGTGGTCAGT ACTATAAGTA TATCCCGTTT GGTTCTGGAA GACGATCTTG TCCAGGGATG
1381 ACTTATGCAT TGCAAGTGGA ACACTTAACA ATGGCACATT TGATCCAAGG TTTCAATTAC
1441 AGAACTCCAA ATGACGAGCC CTTGGATATG AAGGAAGGTG CAGGCATAAC TATACGTAAG
1501 GTAAATCCTG TGGAACTGAT AATAGCGCCT CGCCTGGCAC CTGAGCTTTA TTAAAACCTA
1561 AGATCATCTT GCT
```

SEQ ID 357

```
   1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
  61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
 121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
 181 DWLEELNFGL IVKMIAEKNY ESGKGDEQLE RFKKAFKDFM ILSMEFVLWD AFPIPLFKWV
 241 DFQGHVKAMK RTFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
 301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
 361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVMKLQRDPK
 421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
 481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
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FIG. 154

```
NAME        D425-AB11
ORGANISM    NICOTIANA TABACUM
```
SEQ ID 358

```
   1 ATGCTTTCTC CCATAGAAGC CATTGTAGGA CTAGTAACCT TCACATTTCT CTTCTTCTTC
  61 CTATGGACAA AAAAATCTCA AAAACCTTCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
 121 TGGCCGGTAA TCGGCCATCT TTTCCACTTC AATGACGACG GCGACGACCG TCCATTAGCT
 181 CGAAAACTCG GAGACTTAGC TGACAAATAC GGCCCCGTTT TCACTTTTCG GCTAGGCCTT
 241 CCCCTTGTCT TAGTTGTAAG CAGTTACGAA GCTGTAAAAG ACTGTTTCTC TACAAATGAC
 301 GCCATTTTTT CCAATCGTCC AGCTTTTCTT TACGGCAATT ACCTTGGCTA CAATAATGCC
 361 ATGCTATTTT TGGCCAATTA CGGACCTTAC TGGCGAAAAA ATCGAAAATT AGTTATTCAG
 421 GAAGTTCTCT CCGCTAGTCG TCTCGAAAAA TTCAAACACG TGAGATTTGC AAGAATTCAA
 481 GCGAGCATTA AGAATTATA TACTCGAATT GATGGAAATT CGAGTACGAT AAATTTAACT
 541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG ATCGTGAAGA TGATCGCTGG AAAAAATTAT
 601 GAATCCGGTA AAGGAGATGA ACAAGTGGAG AGATTTAAGA AAGCGTTTAA GGATCTTATG
 661 ATTTTATCAA TGGAGTTTGT GTTATGGGAT GCATTTCCAA TTCCATTATT TAAATGGGTG
 721 GATTTTCAAG GCATGTTAA GGCTATGAAA AGGACTTTTA AAGATATAGA TTCTGTTTTT
 781 CAGAATTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTAA TGCAGAAGGG
 841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAAATGA GTAATGAATA TCTTGGTGAA
 901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACGGTGTTTA GTTTGGTCTT GGATGCAGCA
 961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGGCATTAT TGATAAACAA TCAAAAGGCC
1021 TTGACGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGACAGATG GGTAGAAGAG
1081 AGTGATATTA AGGATTTGGT ATACCTCCAA GCTATTGTTA AAGAAGTGTT ACGATTATAT
1141 CCACCAGGAC CTTTGTTAGT ACCACACGAA AATGTAGAAG ATTGTGTTGT TAGGGGATAT
1201 CACATTCCTA AAGGGACAAG ATTATTCGCA AACGTCATGA AACTGCAACG TGATCCTAAA
1261 CTCTGGTCTG ATCCTGATAC TTTCGATCCA GAGAGATTCA TTGCTACTGA TATTGACTTT
1321 CGTGGTCAGT ACTATAAGTA TATCCCGTTT GGTTCTGGAA GACGATCTTG TCCAGGGATG
1381 ACTTATGCAT TGCAAGTGGA ACACTTAACA ATGGCACATT TGATCCAAGG TTTCAATTAC
1441 AGAACTCCAA ATGACGAGCC CTTGGATATG AAGGAAGGTG CAGGCATAAC TATACGTAAG
1501 GTAAATCCTG TGGAACTGAT AATAGCGCCT CGCCTGGCAC CTGAGCTTTA TTAAAACCTA
1561 AGATCATCTT GCT
```

SEQ ID 359

```
  1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
 61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGNYLGYNNA
121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDLM ILSMEFVLWD AFPIPLFKWV
241 DFQGHVKAMK RTFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVRGY HIPKGTRLFA NVMKLQRDPK
421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
```

FIG. 155
NAME   D425-AC9
ORGANISM   NICOTIANA TABACUM
SEQ ID 360

```
   1 ATGCTTTCTC CCATAGAAGC CATTGTAGGA CTAGTAACCT TCACATTTCT CTTCTTCTTC
  61 CTATGGACAA AAAAATCTCA AAACCTTCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
 121 TGGCCGGTAA TCGGCCATCT TTTCCACTTC AATGACGACG GCGACGACCG TCCATTAGCT
 181 CGAAAACTCG GAGACTTAGC TGACAAATAC GGCCCCGTTT TCACTTTTCG GCTAGGCCTT
 241 CCCCTTGTCT TAGTTGTAAG CAGTTACGAA GCTGTAAAAG ACTGTTTCTC TACAAATGAC
 301 GCCATTTTTT CCAATCGTCC AGCTTTTCTT TACGGCGATT ACCTTGGCTA CAATAATGCC
 361 ATGCTATTTT TGGCCAATTA CGGACCTTAC TGGCGAAAAA ATCGAAAATT AGTTATTCAG
 421 GAAGTTCTCT CCGCTAGTCG TCTCGAAAAA TTCAAACACG TGAGATTTGC AAGAATTCAA
 481 GCGAGCATTA AGAATTTATA TACTCGAATT GATGGAAATT CGAGTACGAT AAATTTAACT
 541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG ATCGTGAAGA TGATCGCTGG AAAAAATTAT
 601 GAATCCGGTA AAGGAGATGA ACAAGTGGAG AGATTTAAGA AAGCGTTTAA GGATTTTATG
 661 ATTTATCAA TGGAGTTTGT GTTATGGGAT GCATTTCCAA TTCCATTATT TAAATGGGTG
 721 GATTTTCAAG GGCATGTTAA GGCTATGAAA AGGACTTTTA AAGATATAGA TTCTGTTTTT
 781 CAGAATTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTAA TGCAGAAGGG
 841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAAATGA GTAATGAATA TCTTGGTGAA
 901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACGGTGTTTA GTTTGGTCTT GGATGCAGCA
 961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGGCATTAT TGATAAACAA TCAAAAGGCC
1021 TTGACGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGACAGATG GGTAGAAGAG
1081 AGTGATATTA AGGATTTGGT ATACCTCCAA GCTATTGTTA AGAAGTGTT ACGATTATAT
1141 CCACCAGGAC CTTTGTTAGT ACCACACGAA AATGTAGAAG ATTGTGTTGT TAGTGGATAT
1201 CACATTCCTA AAGGGACAAG ATTATTCGCA AACGTCGTGA AACTGCAACG TGATCCTAAA
1261 CTCTGGTCTG ATCCTGATAC TTTCGATCCA GAGAGATTCA TTGCTACTGA TATTGACTTT
1321 CGTGGTCAGT ACTATAAGTA TATCCCGTTT GGTTCTGGAA GACGATCTTG TCCAGGGATG
1381 ACTTATGCAT TGCAAGTGGA ACACTTAACA ATGGCACATT TGATCCAAGG TTTCAATTAC
1441 AGAACTCCAA ATGACGAGCC CTTGGATATG AAGGAAGGTG CAGGCATAAC TATACGTAAG
1501 GTAAATCCTG TGGAACTGAT AATAGCGCCT CGCCTGGCAC CTGAGCTTTA TTAAAACCTA
1561 AGATCATCTT GCT
```

SEQ ID 361

```
   1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
  61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
 121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
 181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDFM ILSMEFVLWD AFPIPLFKWV
 241 DFQGHVKAMK RTFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
 301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
 361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVVKLQRDPK
 421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
 481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
```

FIG. 156
NAME   D425-AC10
ORGANISM   NICOTIANA TABACUM
SEQ ID 362

```
   1 CATAATGCTT TCTCCCATAG AAGCCATTGT AGGACTAGTA ACCTTCACAT TTCTCTTCTT
  61 CTTCCTATGG ACAAAAAAAT CTCAAAAACC TTCAAAACCC TTACCACCGA AAATCCCCGG
 121 AGGATGGCCG GTAATCGGCC ATCTTTTCCA CTTCAATGAC GACGGCGACG ACCGTCCATT
 181 AGCTCGAAAA CTCGGAGACT TAGCTGACAA ATACGGCCCC GTTTTCACTT TTCGGCTAGG
 241 CCTTCCCCTT GTCTTAGTTG TAAGCAGTTA CGAAGCTGTA AAAGACTGTT TCTCTACAAA
 301 TGACGCCATT TTTTCCAATC GTCCAGCTTT TCTTTACGGC GATTACCTTG GCTACAATAA
 361 TGCCATGCTA TTTTTGGCCA ATTACGGACC TTACTGGCGA AAAAATCGAA AATTAGTTAT
 421 TCAGGAAGTT CTCTCCGCTA GTCGTCTCGA AAAATTCAAA CACGTGAGAT TTGCAAGAAT
 481 TCAAGCGAGC ATTAAGAATT TATATACTCG AATTGATGGA AATTCGAGTA CGATAAATTT
 541 AACTGATTGG TTAGAAGAAT TGAATTTTGG TCTGATCGTG AAGATGATCG CTGGAAAAAA
 601 TTATGAATCC GGTAAAGGAG ATGAACAAGT GGAGAGATTT AAGAAAGCGT TTAAGGATTT
 661 TATGATTTTA TCAATGGAGT TTGTGTTATG GGATTCATTT CCAATTCCAT TATTTAAATG
 721 GGTGGATTTT CAAGGGCATG TTAAGGCTAT GAAAAGGACT TTTAAAGATA TAGATTCTGT
 781 TTTTCAGAAT TGGTTAGAGG AACATATTAA TAAAAGAGAA AAAATGGAGG TTAATGCAGA
 841 AGGGAATGAA CAAGATTTCA TTGATGTGGT GCTTTCAAAA ATGAGTAATG AATATCTTGG
 901 TGAAGGTTAC TCTCGTGATA CTGTCATTAA AGCAACGGTG TTTAGTTTGG TCTTGGATGC
 961 AGCAGACACA GTTGCTCTTC ACATAAATTG GGGAATGGCA TTATTGATGA ACAATCAAAA
1021 GGCCTTGACG AAAGCACAAG AAGAGATAGA CACAAAAGTT GGTAAGGACA GATGGGTAGA
1081 AGAGAGTGAT ATTAAGGATT TGGTATACCT CCAAGCTATT GTTAAAGAAG TGTTACGATT
1141 ATATCCACCA GGACCTTTGT TAGTACCACA CGAAAATGTA GAAGATTGTG TTGTTAGTGG
1201 ATATCACATT CCTAAAGGGA CAAGATTATT CGCAAACGTC ATGAAACTGC AACGTGATCC
1261 TAAACTCTGG TCTGATCCTG ATACTTTCGA TCCAGAGAGA TTCATTGCTA CTGATATTGG
1321 CTTTCGTGGT CAGTACTATA AGTATATCCC GTTTGGTTCT GGAAGACGAT CTTGTCCAGG
1381 GATGACTTAT GCATTGCAAG TGGAACACTT AACAATGGCA CATTTGATCC AAGGTTTCAA
1441 TTACAGAACT CCAAATGACG AGCCCTTGGA TATGAAGGAA GGTGCAGGCA TAACTATACG
1501 TAAGGTAAAT CCTGTGGAAC TGATAATAGC GCCTCGCCTG GCACCTGAGC TTTATTAAAA
1561 CCTAAGATCA TCTTGCT
```

SEQ ID 363

```
   1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
  61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
 121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
 181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDFM ILSMEFVLWD SFPIPLFKWV
 241 DFQGHVKAMK RTFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
 301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLMNNQKA LTKAQEEIDT KVGKDRWVEE
 361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVMKLQRDPK
 421 LWSDPDTFDP ERFIATDIGF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
 481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
```

FIG. 157
NAME   D425-AC11
ORGANISM   NICOTIANA TABACUM
SEQ ID 364

```
   1 ATGCTTTCTC CCATAGAAGC CATTGTAGGA CTAGTAACCT TCACATTTCT CTTCTTCTTC
  61 CTATGGACAA AAAAATCTCA AAAACCTTCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
 121 TGGCCGGTAA TCGGCCATCT TTTCCACTTC AATGACGACG GCGACGACCG TCCATTAGCT
 181 CGAAAACTCG GAGACTTAGC TGACAAATAC GGCCCCGTTC TCACTTTTCG GCTAGGCCTT
 241 CCCCTTGTCT TAGTTGTAAG CAGTTACGAA GCTGTAAAAG ACTGTTTCTC TACAAATGAC
 301 GCCATTTTTT CCAATCGTCC AGCTTTTCTT TACGGCGATT ACCTTGGCTA CAATAATGCC
 361 ATGCTATTTT TGGCCAATTA CGGACCTTAC TGGCGAAAAA ATCGAAAATT AGTTATTCAG
 421 GAAGTTCTCT CCGCTAGTCG TCTCGAAAAA TTCAAACACG TGAGATTTGC AAGAATTCAA
 481 GCGAGCATTA AGAATTTATA TACTCGAATT GATGGAAATT CGAGTACGAT AAATTTAACT
 541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG ATCGTGAAGA TGATCGCTGG AAAAAATTAT
 601 GAATCCGGTA AAGGAGATGA ACAAGTGGAG AGATTTAAGA AAGCGTTTAA GGATTTTATG
 661 ATTTTATCAA TGGAGTTTGT GTTATGGGAT GCATTCCAA TTCCATTATT TAAATGGGTG
 721 GACTTTCAAG GGCATGTTAA GGCTATGAAA AGGACTTTTA AAGATATAGA TTCTGTTTTT
 781 CAGAATTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTAA TGCAGAAGGG
 841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAAATGA GTAATGAATA TCTTGGTGAA
 901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACGGTGTTTA GTTTGGTCTT GGATGCAGCA
 961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGGCATTAT TGATAAACAA TCAAAAGGCC
1021 TTGACGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGACAGATG GGTAGAAGAG
1081 AGTGATATTA AGGATTTGGT ATACCTCCAA GCTATTGTTA AGAAGTGTT ACGATTATAT
1141 CCACCAGGAC CTTTGTTAGT ACCACACGAA AATGTAGAAG ATTGTGTTGT TAGTGGATAT
1201 CACATTCCTA AAGGGACAAG ATTATTCGCA AACGTCATGA AACTGCAACG TGATCCTAAA
1261 CTCTGGTCTG ATCCTGATAC TTTCGATCCA GAGAGATTCA TTGCTACTGA TATTGACTTT
1321 CGTGGTCAGT ACTATAAGTA TATCCCGTTT GGTTCTGGAA GACGATCTTG TCCAGGGATG
1381 ACTTATGCAT TGCAAGTGGA ACACTTAACA ATGGCACATT TGATCCAAGG TTTCAATTAC
1441 AGAACTCCAA ATGACGAGCC CTTGGATATG AAGGAAGGTG CAGGCATAAC TATACGTAAG
1501 GTAAATCCTG TGGAACTGAT AATAGCGCCT CGCCTGGCAC CTGAGCTTTA TTAAAACCTA
1561 AGATCATCTT GCT
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SEQ ID 365

```
   1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
  61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
 121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
 181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDFM ILSMEFVLWD AFPIPLFKWV
 241 DFQGHVKAMK RAFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
 301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
 361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFV NVMKLQRDPK
 421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
 481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
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FIG. 158
NAME   D425-AG11
ORGANISM   NICOTIANA TABACUM
SEQ ID 366

```
   1 ATGCTTTCTC CCATAGAAGC CATTGTAGGA CTAGTAACCT TCACATTTCT CTTCTTCTTC
  61 CTATGGACAA AAAAATCTCA AAAACCTTCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
 121 TGGCCGGTAA TCGGCCATCT TTTCCACTTC AATGACGACG GCGATGACCG TCCATTAGCT
 181 CGAAAACTCG GAGACTTAGC TGACAAATAC GGCCCCGTTT TCACTTTTCG GCTAGGCCTT
 241 CCCCTTGTCT TAGTTGTAAG CAGTTACGAA GCTGTAAAAG ACTGTTTCTC TACAAATGAC
 301 GCCATTTTTT CCAATCGTCC AGCTTTTCTT TACGGCGATT ACCTTGGCTA CAATAATGCC
 361 ATGCTATTTT TGGCCAATTA CGGACCTTAC TGGCGAAAAA ATCGAAAATT AGTTATTCAG
 421 GAAGTTCTCT CCGCTAGTCG TCTCGAAAAA TTCAAACACG TGAGATTTGC AAGAATTCAA
 481 GCGAGCATTA AGAATTTATA TACTCGAATT GATGGAAATT CGAGTACGAT AAATTTAACT
 541 GATTGGTTAG AAGAATTGAA TTTTGGCCTG ATCGTGAAGA TGATCGCTGG AAAAAATTAT
 601 GAATCCGGTA AAGGAGATGA ACAAGTGGAG AGATTTAAGA AAGCGTTTAA GGATTTTATG
 661 ATTTTATCAA TGGAGTTTGT GTTATGGGAT GCATTCCAA TTCCATTATT TAAATGGGTG
 721 GATTTTCAAG GCATGTTAA GGCTATGAAA AGGGCTTTTA AGATATAGA TTCTGTTTTT
 781 CAGAATTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTAA TGCAGAAGGG
 841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAAATGA GTAATGAATA TCTTGGTGAA
 901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACGGTGTTTA GTTTGGTCTT GGATGCAGCA
 961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGGCATTAT TGATAAACAA TCAAAAGGCC
1021 TTGACGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGACAGATG GGTAGAAGAG
1081 AGTGATATTA AGGATTTGGT ATACCTCCAA GCTATTGTTA AGAAGTGTT ACGATTATAT
1141 CCACCAGGAC CTTTGTTAGT ACCACACGAA AATGTAGAAG ATTGTGTTGT TAGTGGATAT
1201 CACATTCCTA AAGGGACAAG ATTATTCGTA AACGTCATGA AACTGCAACG TGATCCTAAA
1261 CTCTGGTCTG ATCCTGATAC TTTCGATCCA GAGAGATTCA TTGCTACTGA TATTGACTTT
1321 CGTGGTCAGT ACTATAAGTA TATCCCGTTT GGTTCTGGAA GACGATCTTG TCCAGGGATG
1381 ACTTATGCAT TGCAAGTGGA CACACTTAACA ATGGCACATT TGATCCAAGG TTTCAATTAC
1441 AGAACTCCAA ATGACGAGCC CTTGGATATG AAGGAAGGTG CAGGCATAAC TATACGTAAG
1501 GTAAATCCTG TGGAACTGAT AATAGCGCCT CGCCTGGCAC CTGAGCTTTA TTAAAACCTA
1561 AGATCATCTT GCT
```

SEQ ID 367

```
   1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
  61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
 121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
 181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDFM ILSMEFVLWD AFPIPLFKWV
 241 DFQGHVKAMK RAFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
 301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
 361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFV NVMKLQRDPK
 421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
 481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
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FIG. 159
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NAME        D425-AH7
ORGANISM    NICOTIANA TABACUM
SEQ ID 368
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   1 ATGCTTTCTC CCATAGAAGC CATTGTAGGA CTAGTAACCT TCACATTTCT CTTCTTCTTC
  61 CTATGGACAA AAAAATCTCA AAAACCTTCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
 121 TGGCCGGTAA TCGGCCATCT TTTCCACTTC AATGACGACG GCGACGACCG TCCATTAGCT
 181 CGAAAACTCG GAGACTTAGC TGACAAATAC GGCCCCGTTT TCACTTTTCG GCTAGGCCTT
 241 CCCCTTGTCT TAGTTGTAAG CAGTTACGAA GCTGTAAAAG ACTGTTTCTC TACAAATGAC
 301 GCCATTTTTT CCAATCGTCC AGCTTTTCTT TACGGCGATT ACCTTGGCTA CAATAATGCC
 361 ATGCTATTTT TGGCCAATTA CGGACCTTAC TGGCGAAAAA ATCGAAAATT AGTTATTCAG
 421 GAAGTTCTCT CCGCTAGTCG TCTCGAAAAA TTCAAACACG TGAGATTTGC AAGAATTCAA
 481 GCGAGCATTA GAATTTATA TACTCGAATT GATGGAAATT CGAGTACGAT AAATTTAACT
 541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG GTCGTGAAGA TGATCGCTGG AAAAAATTAT
 601 GAATCCGGTA AAGGAGATGA ACAAGTGGAG AGATTTAAGA AAGCGTTTGA GGATTTTATG
 661 ATTTTATCAA TGGAGTTTGT GTTATGGGAT GCATTCCAA TTCCATTATT TAAATGGGTG
 721 GATTTTCAAG GCATGTTAA GGCTATGAAA AGGACTTTTA AGATATAGA TTCTGTTTTT
 781 CAGAATTGGT TAGAGGAACA TATTAATAAA AGAGAAAAA TGGAGGTTAA TGCAGAAGGG
 841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAATGA GTAATGAATA TCTTGGTGAA
 901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACGGTGTTTA GTTTGGTCTT GGATGCAGCA
 961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGGCATTAT TGATAAACAA TCAAAAGGCC
1021 TTGACGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGACAGATG GGTAGAAGAG
1081 AGTGATATTA AGGATTTGGT ATACCTCCAA GCTATTGTTA AGAAGTGTT ACGATTATAT
1141 CCACCAGGAC CTTTGTTAGT ACCACACGAA AATGTAGAAG ATTGTGTTGT TAGTGGATAT
1201 CACATTCCTA AAGGGACAAG ATTATTCGCA AACGTCATGA AACTGCAACG TGATCCTAAA
1261 CTCTGGTCTG ATCCTGATAC TTTCGATCCA GAGAGATTCA TTGCTACTGA TATTGACTTT
1321 CGTGGTCAGT ACTATAAGTA TATCCCGTTT GGTTCTGGAA GACGATCTTG TCCAGGGATG
1381 ACTTATGCAT TGCAAGTGGA ACACTTAACA ATGGCACATT TGATCCAAGG TTTCAATTAC
1441 AGAACTCCAA ATGACGAGCC CTTGGATATG AAGGAAGGTG CAGGCATAAC TATACGTAAG
1501 GTAAATCCTG TGGAACTGAT AATAGCGCCT CGCCTGGCAC CTGAGCTTTA TTAAAACCTA
1561 AGATCATCTT GCT
```

SEQ ID 369

```
   1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
  61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
 121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
 181 DWLEELNFGL VVKMIAGKNY ESGKGDEQVE RFKKAFEDFM ILSMEFVLWD AFPIPLFKWV
 241 DFQGHVKAMK RTFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
 301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
 361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVMKLQRDPK
 421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
 481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
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FIG. 160
NAME   D425-AH11
ORGANISM   NICOTIANA TABACUM
SEQ ID 370

```
   1 ATGCTTTCTC CCATAGAAGC CATTGTAGGA CTAGTAACCT TCACATTTCT CTTCTTCTTC
  61 CTATGGACAA AAAAATCTCA AAAACCTTCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
 121 TGGCCGGTAA TCGGCCATCT TTTCCACTTC AATGACGACG GCGACGACCG TCCATTAGCT
 181 CAAAAACTCG GAGACTTAGC TGACAAATAC GGCCCCGTTT TCACTTTTCG GCTAGGCCTT
 241 CCCCTTGTCT TAGTTGTAAG CAGTTACGAA GCTGTAAAAG ACTGTTTCTC TACAGATGAC
 301 GCCATTTTTT CCAATCGTCC AGCTTTTCTT TACGGCGATT ACCTTGGCTA CAATAATGCC
 361 ATGCTATTTT TGGCCAATTA CGGACCTTAC TGGCGAAAAA ATCGAAAATT AGTTATTCAG
 421 GAAGTTCTCT CCGCTAGTCG TCTCGAAAAA TTCAAACACG TGAGATTTGC AAGAATTCAA
 481 GCGAGCATTA AGAATTTATA TACTCGAATT GATGGAAATT CGAGTACGAT AAATTTAACT
 541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG ATCGTGAAGA TGATCGCTGG AAAAAATTAT
 601 GAATCCGGTA AAGGAGATGA ACAAGTGGAG AGATTTAAGA AAGCGTTTAA GGATTTTATG
 661 ATTTTATCAA TGGAGTTTGT GTTATGGGAT GCATTCCAA TTCCATTATT TAAATGGGTG
 721 GATTTTCAAG GGCATGTTAA GGCTATGAAA AGGACTTTTA AGATATAGA TTCTGTTTTT
 781 CAGAATTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTAA TGCAGAAGGG
 841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAAATGA GTAATGAATA TCTTGGTGAA
 901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACGGTGTTTG GTTTGGTCTT GGATGCAGCA
 961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGGCATTAT TGATAAACAA TCAAAAGGCC
1021 TTGACGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGACAGATG GGTAGAAGAG
1081 AGTGATATTA AGGATTTGGT ATACCTCCAA GCTATTGTTA AGAAGTGTT ACGATTATAT
1141 CCACCAGGAC CTTTGTTAGT ACCACACGAA AATGTAGAAG ATTGTGTTGT TAGTGGATAT
1201 CACATTCCTA AAGGGACAAG ATTATTCGCA AACGTCATGA AACTGCAACG TGATCCTAAA
1261 CTCTGGTCTG ATCCTGATAC TTTCGATCCA GAGAGATTCA TTGCTACTGA TATTGACTTT
1321 CGTGGTCAGT ACTATAAGTA TATCCCGTTT GGTTCTGGAA GACGATCTTG TCCAGGGATG
1381 ACTTATGCAT TGCAAGTGGA ACACTTAACA ATAGCACATT TGATCCAAGG TTTCAATTAC
1441 AGAACTCCAA ATGACGAGCC CTTGGATATG AAGGAAGGTG CAGGCATAAC TATACGTAAG
1501 GTAAATCCTG TGGAACTGAT AATAGCGCCT CGCCTGGCAC CTGAGCTTTA TTAAAACCTA
1561 AGATCATCTT GCT
```

SEQ ID 371

```
   1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
  61 QKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTDD AIFSNRPAFL YGDYLGYNNA
 121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
 181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDFM ILSMEFVLWD AFPIPLFKWV
 241 DFQGHVKAMK RTFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
 301 GYSRDTVIKA TVFGLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
 361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVMKLQRDPK
 421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT IAHLIQGFNY
 481 RTPNDEPLDM KEGAGITIRK VNPVELIIAP RLAPELY
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FIG. 161
NAME   D427-AA5
ORGANISM   NICOTIANA TABACUM
SEQ ID 372

```
   1 ATGCTTTCTC CCATAGAAGC CATTGTAGGA CTAGTAACCT TCACATTTCT CTTCTTCTTC
  61 CTATGGACAA AAAAATCTCA AAAACCTTCA AAACCCTTAC CACCGAAAAT CCCCGGAGGA
 121 TGGCCGGTAA TCGGCCATCT TTTCCACTTC AATGACGACG GCGACGACCG TCCATTAGCT
 181 CGAAAACTCG GAGACTTAGC TGACAAATAC GGCCCCGTTT TCACTTTTCG GCTAGGCCTT
 241 CCCCTTGTCT TAGTTGTAAG CAGTTACGAA GCTGTAAAAG ACTGTTTCTC TACAAATGAC
 301 GCCATTTTTT CCAATCGTCC AGCTTTTCTT TACGGCGATT ACCTTGGCTA CAATAATGCC
 361 ATGCTATTTT TGGCCAATTA CGGACCTTAC TGGCGAAAAA ATCGAAAATT AGTTATTCAG
 421 GAAGTTCTCT CCGCTAGTCG TCTCGAAAAA TTCAAACACG TGAGATTTGC AAGAATTCAA
 481 GCGAGCATTA AGAATTTATA TACTCGAATT GATGGAAATT CGAGTACGAT AAATTTAACT
 541 GATTGGTTAG AAGAATTGAA TTTTGGTCTG ATCGTGAAGA TGATCGCTGG AAAAAATTAT
 601 GAATCCGGTA AAGGAGATGA ACAAGTGGAG AGATTTAAGA AAGCGTTTAA GGATTTTATG
 661 ATTTTATCAA TGGAGTTTGT GTTATGGGAT GCATTCCAA TTCCATTATT TAAATGGGTG
 721 GATTTTCAAG GGCATGTTAA GGCTATGAAA AGGACTTTTA AGATATAGA TTCTGTTTTT
 781 CAGAATTGGT TAGAGGAACA TATTAATAAA AGAGAAAAAA TGGAGGTTAA TGCAGAAGGG
 841 AATGAACAAG ATTTCATTGA TGTGGTGCTT TCAAAAATGA GTAATGAATA TCTTGGTGAA
 901 GGTTACTCTC GTGATACTGT CATTAAAGCA ACGGTGTTTA GTTTGGTCTT GGATGCAGCA
 961 GACACAGTTG CTCTTCACAT AAATTGGGGA ATGGCATTAT TGATAAACAA TCAAAAGGCC
1021 TTGACGAAAG CACAAGAAGA GATAGACACA AAAGTTGGTA AGGACAGATG GGTAGAAGAG
1081 AGTGATATTA AGGATTTGGT ATACCTCCAA GCTATTGTTA AGAAGTGTT ACGATTATAT
1141 CCACCAGGAC CTTTGTTAGT ACCACACGAA AATGTAGAAG ATTGTGTTGT TAGTGGATAT
1201 CACATTCCTA AAGGGACAAG ATTATTCGCA AACGTCATGA AACTGCAACG TGATCCTAAA
1261 CTCTGGTCTG ATCCTGATAC TTTCGATCCA GAGAGATTCA TTGCTACTGA TATTGACTTT
1321 CGTGGTCAGT ACTATAAGTA TATCCCGTTT GGTTCTGGAA GACGATCTTG TCCAGGGATG
1381 ACTTATGCAT TGCAAGTGGA ACACTTAACA ATGGCACATT TGATCCAAGG TTTCAATTAC
1441 AGAACTCCAA ATGACGAGCC CTCGGATATG AAGGAAGGTG CAGGCATAAC TATACGTAAA
1501 GTAAATCCTG TGGAACTGAT AATAGCGCCT CGCCTGGCAC CTGAGCTTTA TTAAAACCTA
1561 AGATCATCTT GCTTG
```

SEQ ID 373

```
   1 MLSPIEAIVG LVTFTFLFFF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGDDRPLA
  61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AVKDCFSTND AIFSNRPAFL YGDYLGYNNA
 121 MLFLANYGPY WRKNRKLVIQ EVLSASRLEK FKHVRFARIQ ASIKNLYTRI DGNSSTINLT
 181 DWLEELNFGL IVKMIAGKNY ESGKGDEQVE RFKKAFKDFM ILSMEFVLWD AFPIPLFKWV
 241 DFQGHVKAMK RTFKDIDSVF QNWLEEHINK REKMEVNAEG NEQDFIDVVL SKMSNEYLGE
 301 GYSRDTVIKA TVFSLVLDAA DTVALHINWG MALLINNQKA LTKAQEEIDT KVGKDRWVEE
 361 SDIKDLVYLQ AIVKEVLRLY PPGPLLVPHE NVEDCVVSGY HIPKGTRLFA NVMKLQRDPK
 421 LWSDPDTFDP ERFIATDIDF RGQYYKYIPF GSGRRSCPGM TYALQVEHLT MAHLIQGFNY
 481 RTPNDEPSDM KEGAGITIRK VNPVELIIAP RLAPELY
```

FIG. 162

Probe set sequences of all clones on GeneChip

Probe Set Name	Probe X	Probe Y	Probe Interrogation Position	Probe Sequence	SEQ ID
GEN1018_x_at	7	65	14	GAAAGCGTTTAAGGATTTTATGATT	374
GEN1018_x_at	110	91	35	GATTTTATCAATGGAGTTTGTGTTA	375
GEN1018_x_at	65	115	57	TTATGGGATGCATTTCCAATTCCAT	376
GEN1018_x_at	52	111	60	TGGGATGCATTTCCAATTCCATTAT	377
GEN1018_x_at	18	97	62	GGATGCATTTCCAATTCCATTATTT	378
GEN1018_x_at	38	85	63	GATGCATTTCCAATTCCATTATTTA	379
GEN1018_x_at	99	117	65	TGCATTTCCAATTCCATTATTTAAA	380
GEN1018_x_at	18	69	66	GCATTTCCAATTCCATTATTTAAAT	381
GEN1018_x_at	59	3	82	TATTTAAATGGGTGGATTTTCAAGG	382
GEN1018_x_at	13	23	97	ATTTTCAAGGGCATGTTAAGGCTAT	383
GEN1018_x_at	28	53	102	CAAGGGCATGTTAAGGCTATGAAAA	384
GEN1018_x_at	10	93	106	GGCATGTTAAGGCTATGAAAAGGAC	385
GEN1018_x_at	44	79	110	TGTTAAGGCTATGAAAAGGACTTTT	386
GEN1018_x_at	95	47	274	AAGGTTACTCTCGTGATACTGTCAT	387
GEN1018_x_at	1	73	333	GCAGACACAGTTGCTCTTCACATAA	388
GEN1018_x_at	63	41	339	ACAGTTGCTCTTCACATAAATTGGG	389
GEN1018_x_at	84	81	473	GGTATACCTCCAAGCTATTGTTAAA	390
GEN1018_x_at	25	95	501	GTGTTACGATTATATCCACCAGGAC	391
GEN1018_x_at	69	21	505	TACGATTATATCCACCAGGACTTT	392
GEN1018_x_at	67	3	519	CCAGGACCTTGTTAGTACCACACG	393
GEN1018_x_at	30	3	525	CCTTTGTTAGTACCACACGAAAATG	394
GEN1018_x_at	1	107	622	TACGTGATCCTAAACTCTGGCCTGA	395
GEN1018_x_at	72	19	643	CTGATCCTGATACTTTCGATCCAGA	396
GEN1018_x_at	33	55	690	GACTTTCGTGGTCAGTACTATAAGT	397
GEN1018_x_at	103	103	698	TGGTCAGTACTATAAGTATATCCCG	398
GEN1019_x_at	107	73	13	GAATTGAATTTTGGTCTGATCGTGA	399
GEN1019_x_at	65	107	24	TGGTCTGATCGTGAAGATGATCGCT	400
GEN1019_x_at	119	25	31	ATCGTGAAGATGATCGCTGGAAAAA	401
GEN1019_x_at	72	71	39	GATGATCGCTGGAAAAATTATGAA	402

FIG. 162

Probe set sequences of all clones on GeneChip

Probe Set Name	Probe X	Probe Y	Probe Interrogation Position	Probe Sequence	SEQ ID
GEN1019_x_at	D121-AA8	107	105	58	TATGAATCCGGTAAAGGAGAGATGAAC	403
GEN1019_x_at	D121-AA8	69	1	64	TCCGGTAAAGGAGATGAACAAGTGG	404
GEN1019_x_at	D121-AA8	1	15	80	AACAAGTGGAGAGAGATTTAAGAAAGC	405
GEN1019_x_at	D121-AA8	111	91	120	GATTTTATCAATGGAGTTGTGTTA	406
GEN1019_x_at	D121-AA8	63	115	142	TTATGGGATGCATTTCCAATTCCAT	407
GEN1019_x_at	D121-AA8	54	111	145	TGGGATGCATTTCCAATTCCATTAT	408
GEN1019_x_at	D121-AA8	14	97	147	GGATGCATTTCCAATTCCATTATTT	409
GEN1019_x_at	D121-AA8	35	85	148	GATGCATTTCCAATTCCATTATTTA	410
GEN1019_x_at	D121-AA8	98	117	150	TGCATTTCCAATTCCATTATTTAAA	411
GEN1019_x_at	D121-AA8	96	59	164	CATTATTTAAATGGGTGGATTTTCA	412
GEN1019_x_at	D121-AA8	12	23	182	ATTTTCAAGGCATGTTAAGGCTAT	413
GEN1019_x_at	D121-AA8	27	53	187	CAAGGCATGTTAAGGCTATGAAAA	414
GEN1019_x_at	D121-AA8	45	79	195	TGTTAAGGCTATGAAAAGGACTTTT	415
GEN1019_x_at	D121-AA8	94	47	359	AAGGTTACTCTCGTGATACTGTCAT	416
GEN1019_x_at	D121-AA8	2	73	418	GCAGACACAGTTGCTCTTCACATAA	417
GEN1019_x_at	D121-AA8	74	83	588	GTTACGATTATATCCACCAGGACCT	418
GEN1019_x_at	D121-AA8	66	3	604	CCAGGACCTTGTTGTAGTACCACACG	419
GEN1019_x_at	D121-AA8	31	3	610	CCTTTGTTAGTACCACACGAAAATG	420
GEN1019_x_at	D121-AA8	111	11	719	AACTCTGGTCTGATCCTGATACTTT	421
GEN1019_x_at	D121-AA8	32	55	775	GACTTTCGTGGTCAGTACTATAAGT	422
GEN1019_x_at	D121-AA8	102	103	783	TGGTCAGTACTATAAGTATATCCCG	423
GEN2012_x_at	D35-BG11	32	7	58	GATCCAAGGTTTCAATTACAGAACT	424
GEN2012_x_at	D35-BG11	119	101	114	GTGCAGGCATAACTATACGTAAGGT	425
GEN2012_x_at	D35-BG11	21	27	140	AATCCTGTGGAACTGATAATAGCGC	426
GEN2012_x_at	D35-BG11	66	21	141	ATCCTGTGGAACTGATAATAGCGCC	427
GEN2012_x_at	D35-BG11	108	17	143	CCTGTGGAACTGATAATAGCGCCTC	428
GEN2012_x_at	D35-BG11	71	105	145	TGTGGAACTGATAATAGCGCCTCGC	429
GEN2012_x_at	D35-BG11	64	99	148	GGAACTGATAATAGCGCCTCGCCTG	430
GEN2012_x_at	D35-BG11	14	77	149	GAACTGATAATAGCGCCTCGCCTGG	431

FIG. 162

Probe set sequences of all clones on GeneChip

Probe Set Name		Probe X	Probe Y	Probe Interrogation Position	Probe Sequence	SEQ ID
GEN2012_x_at	D35-BG11	119	33	151	ACTGATAATAGCGCCTCGCCTGGCA	432
GEN2012_x_at	D35-BG11	17	109	166	TCGCCTGGCACCTGAGCTTTATTAA	433
GEN2012_x_at	D35-BG11	58	55	170	CTGGCACCTGAGCTTTATTAAAACC	434

FIG. 163

SEQ. ID. NO. 434
D424-AA4
```
  1 GTTTTTCCCA TAGAAGCCTT TGTAGGACTA GTAACCTTCA CATTTCTCTC ATACTTCCTA
 61 TGGACAAAAA AATCTCAAAA ACTTCCAAAA CCCTTACCAC CGAAAATCCC CGGAGGATGG
121 CCGGTAATCG GCCATCTTTT TCACTTCAAT AACGACGGCG ACGACCGTCC ATTAGCTCGA
181 AAACTCGGAG ACTTAGCTGA TAAATACGGC CCCGTTTTCA CTTTTCGGCT AGGTCTTCCC
241 CTTGTGCTAG TTGTAAGCAG TTACGAAGCT ATAAAAGATT GCTTCTCTAC AAATGACGCC
301 ATTTTCTCCA ATCGTCCAGC TTTTCTTTAC GGCGAATACC TTGGCTACAA TAATACAATG
361 CTTTTTCTAG CAAATTACGG ACCTTACTGG CGA
```

SEQ. ID. NO. 435
D424-AF5
```
  1 TAGTATACCT CCAAGCTATT GTTAAAAAGG TGTTACGATT ATATCCACCA GGACCTTTGT
 61 TAGTACCACA TGAAAATGTA AAGGATTGTG TTGTTAGTGG ATATCACATT CCTAAAGGGA
121 CTAGATTATT CGCAAACGTC ATGAAACTGC AGCGCGATCC TAAATTCTTG TCAAATCCTG
181 ATAAGTTCGA TCCAGAGAGA TTCATCGCTG GTGATATTGA CTTCCGTGGT CACCACTATG
241 AGTTTATCCC ATTTGGTTCT GGAAGACGAT CTTGTCCGGG GATGACTTAT GCATCGCAAG
301 TGGAACACCT AACAATGGCA CATTTAGTCC AGGGTTTCAA TTACAAAACT CCAAATGACG
361 AGGCCTTGGA TATGAAGGAA GGTGCAGGCA TAACAATACG TAAGGTAAAT CCAGTGGAAT
421 TGATAGTAAC GCCTCGCTTG GCACCTGAGC TTTACTAAAC CTAAGATCTT TCATCTTGG
```

SEQ. ID. NO. 436
```
  1 VYLQAIVKKV LRLYPPGPLL VPHENVKDCV VSGYHIPKGT RLFANVMKLQ RDPKFLSNPD
 61 KFDPERFIAG DIDFRGHHYE FIPFGSGRRS CPGMTYASQV EHLTMAHLVQ GFNYKTPNDE
121 ALDMKEGAGI TIRKVNPVEL IVTPRLAPEL Y
```

SEQ. ID. NO. 437
D425-AA11
```
  1 GGATAGATGG GTAGAAGAGA GTGATATTAA GGATTTGGTG TACCTCCAAG CTATTGTCAA
 61 AGAAGTGTTA CGATTGTATC CACCAGGACC TTTGTTAGTA CCACATGAAA ATGTGGAGGA
121 TTGTGTTGTT AGTGGATATC ACATTCCTAA AGGGACTAGA CTATTTGCGA ATGTCATGAA
181 ACTGTAACGC GATCCTAAAC TCTGGCCAAA TCCTGATAAT TTCGATCCAG AGAGATTCAT
241 CGCTGCAGAT ATTGACTTCC GTGGTCAGCA CTATGAGTAT ATCCCGTTTG GTTCTGGAAG
301 ACGATCTTGT CCGGGGATGA CTTATGCATT GCAAGCGGAA CATCTAACAA TGGCACATTT
361 GATCCAAGGT TTCAATTACA GGACTCCAAC TAACGAGCCC TTGGATATGA AGGAAGGTGC
421 AGGCATAACT ATACGTAAGG TAAATCCTGT GGAAGTGCTA ATTAAGCCTC GCCTGGCACC
481 CGAGCTTTAT TAAAACCTAA GATCATCTTG CT
```

SEQ. ID. NO. 438
```
  1 DRWVEESDIK DLVYLQAIVK EVLRLYPPGP LLVPHENVED CVVSGYHIPK GTRLFANVMK
 61 L.RDPKLWPN PDNFDPERFI AADIDFRGQH YEYIPFGSGR RSCPGMTYAL QAEHLTMAHL
121 IQGFNYRTPT NEPLDMKEGA GITIRKVNPV EVLIKPRLAP ELY
```

SEQ. ID. NO. 439
D425-AF11
```
  1 AGGATAGATG GGTAGAAGAG AGTGATATTA AGGATTTGGT GTACCTCCAA GCTATTGTCA
 61 AAGAAGTGTT ACGATTGTAT CCACCAGGAC CTTTGTTAGT ACCACATGAA AATGTAGAGG
121 ATTGTGTTGT TAGTGGATAT CACATTCCTA AAGGGACTAG ACTATTTGCG AATGTCATGA
181 AACTGCAACG CGATCCTAAA CTCTGGCCAA ATCCTGATAA TTTCGATCCA GAGAGATTCG
241 TCGCTGCAGA TATTGACTTC CGTGGTCAGC ACTATGAGTA TATCCCGTTT GGTTCTGGAA
301 GACGATCTTG TCCGGGGGTG ACTTATGCAT TGCAAGTGGA ACATCACATT TGATCCAAGG
361 TTTCAATTAC AGGACTCCAA CTAACGAGCC CTTGGATATG AAGGAAGGTG CACGCATAAC
421 TATACGTAAG GTAAATCCTG TGGAAGTGCT AATTAAGCCT AGCCTGGCAC CTGAGCTTTA
```

```
481 TTAAAACCTA AGATCATCTT GCT
```

SEQ. ID. NO. 440
```
  1 VYPVWFWKTI LSGGDLCIAS GTSHLIQGFN YRTPTNEPLD MKEGARITIR KVNPVEVLIK
 61 PSLAPELY
```

SEQ. ID. NO. 441
D425-AH10
```
  1 CTGAAATAGA GGGAGTATAA TATTCATTTC AAGAGATCAC TATAAAAAGG AAGTTCGTGA
 61 TAGTTTGATT CTCAAGTTCT TATCTAAAAA TCCATAATGG TTTTTCCCAT AGAAGCCATT
121 GTAGGACTAG TAACCTTCAC ATTTCTCTTA TACTTCCTAT GGACAAAAAA ATCTCAAAAA
181 CCTCCAAAAC CCTTACCACC GAAAATCCCC GGAGGATGGC CGGTAATCGG CCATCTTTTC
241 TACTTCGATA CGAAGGCGA CGACCGTCCA TTAGCTCGGA GACTTAGCTG ATAAATACGG
301 CCCCGTTTTC ACTTTTCGGC TAGGTCTTCC CCTTGTGCTA GTTGTAAGCA GTTATGAAGC
361 TATAAAGAT TGCTTCTCTA CAAATGACGC CATTTTCTCC AATCGTCCAG
```

SEQ. ID. NO. 442
```
  1 MVFPIEAIVG LVTFTFLLYF LWTKKSQKPP KPLPPKIPGG WPVIGHLFYF DNEGDDRPLA
```

SEQ. ID. NO. 443
D426-AA3
```
  1 GGACCTTTGT TAGTACCACA TGAAAATGTA AAGGATTGTG TTGTTAGTGG ATATCACATT
 61 CCTAAAGGGA CTAGATTATT CGCAAACGTC ATGAAACTGC AGCGCGATCC TAAATTCTTG
121 TCAAATCCTG ATAAGTTCGA TCCAGAGAGA TTCATCGCTG GTGATATTGA CTTCCGTGGT
181 CACCACTATG AGTTTATCCC ATTTGGTCCT GGAAGACGAT CTTGTCCGGG GATGACTTAT
241 GCATTGCAAG TGGAACACCT AACAATGGCA CATTTAATCC AGGGTTTCAA TTACAAAACT
301 CCAAATGACG AGCCCTTGGA TATGAAGGAA GGTGCAGGCA TAACTATACG TAAGGTAAAT
361 CCTGTGGAAC TGATAATAGC GCCTCGCCTG GCACCTGAGC TTTATTAAAA CCTAAGATCA
421 T
```

SEQ. ID. NO. 444
```
  1 GPLLVPHENV KDCVVSGYHI PKGTRLFANV MKLQRDPKFL SNPDKFDPER FIAGDIDFRG
 61 HHYEFIPFGP GRRSCPGMTY ALQVEHLTMA HLIQGFNYKT PNDEPLDMKE GAGITIRKVN
121 PVELIIAPRL APELY
```

SEQ. ID. NO. 445
D426-AG1
```
  1 ATGACATTAT TGATAAACAA TCAAAATGCC TTGATGAAAG CACAAGAAGA GATAGACACA
 61 AAAGTTGGTA AGGATAGATG GGTAGAAGAG AGTGATATTA AGGATTTAGT ATACCTCCAA
121 GCTATTGTTA AAAAGGTGTT ACGATTATAT CCACCAGGAC CTTTGTTAGT ACCACATGAA
181 AATGTAAAGG ATTGTGTTGT TAGTGGATAT CACATTCCTA AAGGGACTAG ATTATTCGCA
241 AACGTCATGA AACTGCAGCG CGATCCTAAA CTCTTGTCAA ATCCTGATAA GTTCGATCCA
301 GAGAGATTCA TCGCTGGTGA TATTGACTTC CGTGGTCACC ACTATGAGTT TATCCCATTT
361 GGTTCTGGAA GACGATCTTG TCCGGGGATG ACTTATGCAT TGCAAGTGGA ACACCTAACA
421 ATGGCACATT TAATCCAGGG TTTCAATTAC AAGACTCCAA ATGGCGAGGC CTTGGATATG
481 AAGGAAGGTG CAGGCATAAC AATACGTAAG GTAAATCCAG TGGAATTGAT AATAGCGCCT
541 CGCCTGGCAC CTGAGCTTTA TTAATACCTA AGATCAT
```

SEQ. ID. NO. 446
```
  1 MTLLINNQNA LMKAQEEIDT KVGKDRWVEE SDIKDLVYLQ AIVKKVLRLY PPGPLLVPHE
 61 NVKDCVVSGY HIPKGTRLFA NVMKLQRDPK LLSNPDKFDP ERFIAGDIDF RGHHYEFIPF
121 GSGRRSCPGM TYALQVEHLT MAHLIQGFNY KTPNGEALDM KEGAGITIRK VNPVELIIAP
181 RLAPELY
```

SEQ. ID. NO. 447
D427-AA6

```
  1 GGATATCACA TTCCTAAAGG GACTAGATTA TTCGCAAACG TCATGAAACT GCAGCGCGAT
 61 CCTAAACTCT TGTCAAATCC TGATAAGTTC GATCCAGAGA GATTCATCGC TGGTGATATT
121 GACTTCCGTG GTCACCACTA TGAGTTTATC CCATTTGGTT CTGGAAGACG ATCTTGTCCG
181 GGGATGACTT ATGCATTGCA AGTGGAACAC CTAACAATGG CACATTTAAT CCAGGGTTTC
241 AATTACAAAA CTCCAAATGA CGAGGCCTTG GATATGAAGG AAGGTGCAGG CATAACAATA
301 CGTAAGGTAA ATCCAGTGGA ATTGATAATA ACGCCTCGCT GGCACCTGA GCTTTATTAA
361 AACCTAAGAT CATCTTGCTT G                                        -
```

SEQ. ID. NO. 448

```
  1 GYHIPKGTRL FANVMKLQRD PKLLSNPDKF DPERFIAGDI DFRGHHYEFI PFGSGRRSCP
 61 GMTYALQVEH LTMAHLIQGF NYKTPNDEAL DMKEGAGITI RKVNPVELII TPRLAPELY
```

SEQ. ID. NO. 449
D427-AB6

```
  1 CGATTATATC CACCGGGACC TTTATTAGTA CCCCATGAAA ATGTAGAGGA TTGTGTTGTT
 61 AGTGGATATC ACATTCCTAA AGGGACTAGA CTATTCGCGA ACGTTATGAA ATTACAGCGC
121 GATCCTAAAC TCTGGTCAAA TCCTGATAAG TTCGATCCAG AGAGATTTTT CGCTGCTGAT
181 ATTGACTTTC GTGGTCAACA CTATGAGTTT ATCCCATTTG GTTCTGGAAG ACGATCTTGT
241 CCGGGGATGA CTTATGCTAT GCAAGTGGAA CACCTAACAA TCGCACACTT GATCCAGGGT
301 TTCAATTACA AAACTCCAAA TGACGAGCCC TTGGATATGA AGGAAGGTGC AGGATTAACT
361 ATACGTAAGG TAAATCCTAT AGAAGTGGTA ATTACGCCTC GCCTGACACC TGAGCTTTAT
421 TAAAACCTAA GATCATCTTG CTTG
```

SEQ. ID. NO. 450

```
  1 RLYPPGPLLV PHENVEDCVV SGYHIPKGTR LFANVMKLQR DPKLWSNPDK FDPERFFAAD
 61 IDFRGQHYEF IPFGSGRRSC PGMTYAMQVE HLTIAHLIQG FNYKTPNDEP LDMKEGAGLT
121 IRKVNPIEVV ITPRLTPELY
```

SEQ. ID. NO. 451
D428-AC9

```
  1 ATATCACATT CCTAAAGGGA CTAGATTATT CGCAAACGTC ATGAAACTGC AGCGCGATCC
 61 TAAACTCTTG TCAAATCCTG ATAAGTTCGA TCCAGAGAGA TTCATCGCTG GTGATATTGA
121 CTTCCGTGGT CACCACTATG AGTTTATCCC ATTTGGTTCT GGAAGACGAT CTTGTCCGGG
181 GATGACTTAT GCATTGCAAG TGGAACACCT AACAATGGCA CATTTAATCC AGGGTTTCAA
241 TTACAAAACT CCAAATGACG AGGCCTTGGA TATGAAGGAA GGTGCAGGCA TAACAATACG
301 TAAGGTAAAT CCAGTGGAAT TGATAATAAC GCCTCGCTTG GCACCTGAGC TTTATTAAAA
361 CCTAAGATCA TCTTGCTTG
```

SEQ. ID. NO. 452

```
  1 YHIPKGTRLF ANVMKLQRDP KLLSNPDKFD PERFIAGDID FRGHHYEFIP FGSGRRSCPG
 61 MTYALQVEHL TMAHLIQGFN YKTPNDEALD MKEGAGITIR KVNPVELIIT PRLAPELY
```

SEQ. ID. NO. 453
D428-AH10

```
  1 GTGATACTGT CATAAAAGCA ACAGTGTTTA GTTTAGTCTT GGATGCTGCG GACACAGTTG
 61 CTCTTCACAT GAATTGGGGA ATGGCATTAT TGATAAACAA TCAACATGCC TTGAAGAAAG
121 CGCAAGAAGA GATAGATAAA AAAGTTGGTA AGGATAGATG GGTAGAAGAG AGTGATATTA
181 AGGATTTGGT ATACCTCCAA ACTATTGTTA AGAAGTGTT ACGATTATAT CCACCGGGAC
241 CTTTATTAGT ACCCCATGAA AATGTAGAGG ATTGTGTTGT TAGTGGATAT CACATTCCTA
301 AAGGGACTAG ACTATTCGCG AACGTTATGA AATTACAGCG CGATCCTAAA CTCTGGTCAA
361 ATCCTGATAA GTTCGATCCA GAGAGATTTT TCGCTGCTGA TATTGACTTT CGTGGTCAAC
421 ACTATGAGTT TATCCCATTT
```

SEQ. ID. NO. 454

```
  1 DTVIKATVFS LVLDAADTVA LHMNWGMALL INNQHALKKA QEEIDKKVGK DRWVEESDIK
 61 DLVYLQTIVK EVLRLYPPGP LLVPHENVED CVVSGYHIPK GTRLFANVMK LQRDPKLWSN
121 PDKFDPERFF AADIDFRGQH YEFIPF
```

SEQ. ID. NO. 455

D429-AA1

```
  1 ATAATGCTTT CTCCCATAGA AGCCATTGTA GGAGCAGTAA CCCTAATTAC ATTTCTCTTA
 61 TACTTCCTAT GTACAAAAGA ATCTCAAAAA CATTCAAAGC CCTTACCAAC GAAAATCCCC
121 GGAGGATGGC CGGTAATCGG CCATCTTTTC CACTTCAATA ACGACGGCGA CGACCGTCCA
181 TTAGCTCGAA AACTCGGAGA CTTAGCTGAT AAATACGGCC CCGTTTTCAC TTTTCGGCTA
241 GGTCTTCCCC TTGTGCTAGT TGTAAGCAGT TACGAAGCTT TAAAAGATTG CTTCTCTACA
301 AATGACGCCA TTTTCTCCAA TCGTCCAGCT TTTCTTTACG GCGAATACCT TGGCTACAAT
361 AATACAATGC TTTTTCTAGC AAATTA
```

SEQ. ID. NO. 456

```
  1 MLSPIEAIVG AVTLITFLLY FLCTKESQKH SKPLPTKIPG GWPVIGHLFH FNNDGDDRPL
 61 ARKLGDLADK YGPVFTFRLG LPLVLVVSSY EALKDCFSTN DAIFSNRPAF LYGEYLGYNN
121 TMLFLAN
```

SEQ. ID. NO. 457

D430-AA3

```
  1 AGAAAGCACA AGAAGAGATA GACACAAAAG TTGGCAAGGA TAGATGGGTA GAAGAGAGTG
 61 ATATTAAGGA TTTGGTGTAC CTCCAAGCTA TTGTTAAAGA AGTGTTACGA TTATATCCAC
121 CGGGACCTTT GTTAGTACCA CATGAAAATA TAGAGGATTG TGTTGTTAGT GGATATTACA
181 TTTCTAAAGG GACTAGACTA TTCGCAAATG TTATGAAACT GCAGCGCGAT CCTAAACTCT
241 GGCCAAATCC TGATAATTTC GATCCAGAGA GATTTGTCGC TGCAGGTATT GACTTTCGTG
301 GTCAGCATTA TGAGTATATC CCGTTTGGTT CTGGAAGACG ATCTTGTCCG GGGATGACTT
361 ATGCATTGCA AGTGGAACAC TTAACAATGG CACATTTGAT CCAGGGTTTC AATTACAGCA
421 CTCCAAATGA CGAGCCCTTG GATATGAAGG AAGGTGCAGG TATAACTATA CGTAAGGTAA
481 ATCCCGTGGA AGTGATAATT ATGCCTCGCC TGGCACCTGA GCTTTATTAA AACCTAAGAT
541 CTTTCATCTT GG
```

SEQ. ID. NO. 458

```
  1 KAQEEIDTKV GKDRWVEESD IKDLVYLQAI VKEVLRLYPP GPLLVPHENI EDCVVSGYYI
 61 SKGTRLFANV MKLQRDPKLW PNPDNFDPER FVAAGIDFRG QHYEYIPFGS GRRSCPGMTY
121 ALQVEHLTMA HLIQGFNYST PNDEPLDMKE GAGITIRKVN PVEVIIMPRL APELY
```

SEQ. ID. NO. 459

D431-AE6

```
  1 ATAATGCTTT CTCCCATAGA AGCCATTGTA GGACTAGTAA CCTTCACATT TCTCTTCTAC
 61 TTCCTATGGA CAAAAAAATC TCAAAACCT TCAAAACCCT TACCACCGAA AATCCCCGGA
121 GGATGGCCGG TAATTGGCCA TCTTTTCCAC TTCAATGACG ACGGCAACGA CCGTCCATTA
181 GCTCGAAAAC TCGGAGACTT AGCTGACAAA TACGGCCCCG TTTTCACTTT TCGGCTAGGC
241 CTTCCCCTTG TGTTAGTTGT AAGCAGTTAC GAAGCTATAA AAGACTGTTT CTCTACAAAT
301 GATGCCATTT CTCTAATCG TCCAGCTTTT CTTTACGGCG AATACCTTGG CTACAATAAT
361 GCCATGCTAT TTTTGGCAAA TTACGGACCT TACTGGCGAA AAAATCGTAA ATTAGTTATT
421 CAGGAAGTTC TCTCAGCTAG TCGTCTCAAA AAATTCAAAC ACGTGAGATT CGCCAGAATT
481 CAAACGAGCA TTAAGAATTT ATACACTCGA ATTGATAGAA ATTCGAGTAC GATAAATTTA
541 ACTGATTGGT TAGAAGAATT GAATTTTGGT CTCATCGTGA AGATGATAGC TGGGAAAAAT
601 TATGATTCC
```

SEQ. ID. NO. 460

```
  1 MLSPIEAIVG LVTFTFLFYF LWTKKSQKPS KPLPPKIPGG WPVIGHLFHF NDDGNDRPLA
 61 RKLGDLADKY GPVFTFRLGL PLVLVVSSYE AIKDCFSTND AIFSNRPAFL YGEYLGYNNA
121 MLFLANYGPY WRKNRKLVIQ EVLSASRLKK FKHVRFARIQ TSIKNLYTRI DRNSSTINLT
181 DWLEELNFGL IVKMIAGKNY DS
```

SEQ. ID. NO. 461
D113-AE9

```
     1 TTGATTTACA TGTTTGGTCA AGAACATAAA GACCATCGCC GTCGAATGGC CCCTAATTTT
    61 ACCCCTAAAG CTCTTGCTAC TTACACTGTT ATCCAACAAA AGATTATTAT CAAACACTTT
   121 CAGTCCTGGT TGGACGAAGC ATCCCAATCC CCTAACAAAC CAATCACACT TCGCCTCCTT
   181 TGCCGCGATA TGAACTTGGA TACTTCCCAG ACTGTCTTCG TTGGTCCATA CTTAAACGAA
   241 GATTCCAGAA AGCAGTTCAA TGTTGACTAC AATTACTTCA ATGTTGGGTT AATGAAACTC
   301 CCTGTTGATT TACCTGGTTT CGCCTTCAGA GATGCTAGGT TAGCTGTTGG GAGACTAGTC
   361 GACACGCTTT CCGTTTGTGC AGCACAGAGC CAAATTAAGA TGCGAGGTGA CGAAGAACCC
   421 ACTTGCTTGA TTGATTTTTG GATGCAGGAG AATTTCAGAG AGATTCAGGA AGCTAAGATT
   481 AATGGTTCAC AAAAGCCGTT TGAGTATACC AGTAAGCAAC TTGGTGGCTT CTTATTTGAC
   541 TTCCTCTTTG CGGCTCAAGA TGCTTCTACT TCATCTCTGT TATGGGCAAT GGTGCTTTTG
   601 GAATCTCACC CGCAAGTTCT GGAGAGAGTC CGAGCCGAAG TGGCGAAATT CTGGTCGCCA
   661 GAATCTGAGG AGCAGCCGTT GACGGCGGAG ATGCTTAGGG AAATGAAGTA CCTGGAGGCG
   721 GTGGCGCGTG AGGTTGTTAG GATCAGAACT CCGGCGGCTT TGGTGCCGCA CATTGCCGGC
   781 GAAGAATTCC GGTTAACTGA TGATTATGTT ATTCCAAAGG GGACTATTGT TTTCCCTTCG
   841 GTTTTTGACT CGTCTTTCCA GGGGTTTCCT GAACCGGAGA AGTTTGACCC GGACCGGTTC
   901 ACAGAGGAGA GGCAAGAGGA ACGGGTTTAC AAGAAGAATT ATCTAGCATT TGGAGCTGGG
   961 CCCCATGGAT GTGTGGGACA GAGGTATGCT ATAAACCATT TGATGCTCTT TATTGCGTTG
  1021 TTCACGGCTC TGATTGATTT CAAGAGGCAC AAAACGGACG GCTGTGATGA TATCGCGTAT
  1081 ATTCCAACCA TTGCTCCAAA GGATGATTGT AAAGTGTTCC TTTCACAGAG GTGCACTCGA
  1141 TTCCCATCTT TTTCATGAAC TAATTGCACC TTTTATTTAA TTCTGATCCT CAAATTGGTC
  1201 CCATTGGACC ATGGATGTAA TAGGACCAAT TGCAAGAATG GGGTCCAATG TATTTGTTCT
  1261 TTCCATTTAT TTTTTTT
```

SEQ. ID. NO. 462
```
     1 LIYMFGQEHK DHRRRMAPNF TPKALATYTV IQQKIIIKHF QSWLDEASQS PNKPITLRLL
    61 CRDMNLDTSQ TVFVGPYLNE DSRKQFNVDY NYFNVGLMKL PVDLPGFAFR DARLAVGRLV
   121 DTLSVCAAQS QIKMRGDEEP TCLIDFWMQE NFREIQEAKI NGSQKPFEYT SKQLGGFLFD
   181 FLFAAQDAST SSLLWAMVLL ESHPQVLERV RAEVAKFWSP ESEEQPLTAE MLREMKYLEA
   241 VAREVVRIRT PAALVPHIAG EEFRLTDDYV IPKGTIVFPS VFDSSFQGFP EPEKFDPDRF
   301 TEERQEERVY KKNYLAFGAG PHGCVGQRYA INHLMLFIAL FTALIDFKRH KTDGCDDIAY
   361 IPTIAPKDDC KVFLSQRCTR FPSFS
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SEQ. ID. NO. 463
D114-AE12
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     1 TCATTTTCAG TATGCTATGT TTTGTCTACT TGTGTTGATG TGTTTCGGGG ATAAGCTCGA
    61 CGAGGCTCAA ATCAAACAAA TTGAAGGTGT TCAGCGCAGG TTGCTCCTGG GTTTCCGACG
   121 ATTCAATATA CTCAATTTCT TACCCAGAGT TGGGAAAATA ATCTTTAGGA ATCGCTGGAA
   181 GGAACTAATT GAACTACGTC AAGAGCAAGA GAAGATCTTC ATTCCTTTGA TTGAAGCTCG
   241 AAGTATTAGG GCCAAAGAAC AAAAGCCTGA GGAAGAAGTG GTGGCTTATG TGGATACGCT
   301 GTTGAATTTG GAATTGCCAG GGGAAAACAG GAGCCTCAAT TATGGGGAAA TGGTTAGCCT
   361 CTGCAGTGAA TTCCTAAACG CCGGAACTGA TACGACGTCC ACCGCCTTAC AGTGGGTTAT
   421 GGCCAACTTG GTCAAAAACC CTTCCATTCA GGGAAAACTA TATCAAGAAA TTGCTAGTGT
   481 AGTGGGAGAG AAACAGAGCA AGTTGACAGA GAGGTGGTA AAGGAGGACG ATCTGCATAA
   541 AATGCCATAC TTGAGAGCAG TGATCTTTCT TAGGCGACAC CCGCCTGGTC ACTTTGTGCT
   601 GCCACATACG GTGACAGAGG AAGTAGAACT GAATGGCTAT GTTGTCCCGA GAATGCCAC
   661 CATCAATTTC ATGGTTGCAG ACATGGGTTT GGACCCAAAG GTGTGGGAGG ATCCCTTGGA
   721 ATTCAAGCCA GAGAGGTTCT TAATGGAGGG ATCAGATAAG GAAGGGTTCG ATATAACAGG
   781 AAGTAGAGAG ATCAAGATGA TGCCATTTGG CGCTGGTAGG AGAATTTGCC CAGGCTATGC
   841 TTTGGCTATG CTTCATCTAG AGTACTTTGT GGCTAATTTG GTTTGGCATT TTCGATGGGA
   901 GGCTGTGGAG GGAGATGATG TTGATCTTTC AGAAAAGCTA GAATTCACCG TTGTGATGAA
   961 GAATCCACTT CGAGCTCGTA TCTGCCTCAG AGTTAACTCT ATTTGAATTT GGTAATTACT
  1021 AGTTCTTTCT ATTTGCATTG TTCCCTGTTG ATGGACTTCC CCCATATAGT ACTGGAAGTT
  1081 AGAGGGAGAA TGATTATTAA TGCCTTGCTG CAATATTAGC TTAGTAGTTA GTAGTGAATA
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1141 TAATTGAAAC TGGATATTTC TATCTTATGT GTTGTACATT TGGTTCATTG CAAAGGGCGA
1201 ATTC
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SEQ. ID. NO. 464

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  1 HFQYAMFCLL VLMCFGDKLD EAQIKQIEGV QRRLLLGFRR FNILNFLPRV GKIIFRNRWK
 61 ELIELRQEQE KIFIPLIEAR SIRAKEQKPE EEVVAYVDTL LNLELPGENR SLNYGEMVSL
121 CSEFLNAGTD TTSTALQWVM ANLVKNPSIQ GKLYQEIASV VGEKQSKLTE EVVKEDDLHK
181 MPYLRAVIFL RRHPPGHFVL PHTVTEEVEL NGYVVPKNAT INFMVADMGL DPKVWEDPLE
241 FKPERFLMEG SDKEGFDITG SREIKMMPFG AGRRICPGYA LAMLHLEYFV ANLVWHFRWE
301 AVEGDDVDLS EKLEFTVVMK NPLRARICLR VNSI
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SEQ. ID. NO. 465
D119-AC3

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   1 ATAAATCTAA CTGATTGGTT AGAAGAATTG AATTTTGGTC TGATCGTGAA AATGATCGCT
  61 GGGAAAAATT ATGAATCCGG TAAAGGAGAT GAACAAGTGG AAAGATTTAA GAATGCGTTT
 121 AAGGATTTCA TGGTTTTATC AATGGAATTT GTATTATGGG ATGCATTTCC AATTCCATTA
 181 TTTAAATGGG TGGATTTTCA AGGTCATATT AAGGCAATGA AAAGGACATT TAAGGATATA
 241 GATTCTGTTT TTCAGAACTG GTTAGAGGAA CATATTAATA AAAGAGAAAA AATGGAGGTT
 301 AATGCAGAAG GGAATGAACA AGATTTCATT GATGTGGTGC TTTCAAAAAT GAGTAATGAA
 361 TATCTTGGTG AAGGTTACTC TCGTGATACT GTCATTAAAG CAACGGTGTT TAGTTTGGTC
 421 TTGGATGCAG CAGACACAGT TGCTCTTCAC ATAAATTGGG GAATGGCATT ATTGATAAAC
 481 AATCAAAAGG CCTTGACGAA AGCACAAGAA GAGATAGACA CAAAAGTTGG TAAGGACAGA
 541 TGGGTAGAAG AGAGTGATAT TAAGGATTTG GTATACCTCC AAGCTATTGT TAAAGAAGTG
 601 TTACGATTAT ATCCACCAGG ACCTTTGTTA GTACCACACG AAAATGTAGA AGATTGTGTT
 661 GTTAGTGGAT ATCACATTCC TAAAGGGACA AGATTATTCG CAAACGTCAT GAAACTGCAA
 721 CGTGATCCTA AACTCTGGTC TGATCCTGAT ACTTTCGATC CAGAGAGATT CATTGCTACT
 781 GATATTGACT TTCGTGGTCA GTACTATAAG TATATCCCGT TTGGTTCTGG AAGACGATCT
 841 TGTCCAGGGA TGACTTATGC ATTGCAAGTG GAACACTTAA CAATGGCACA TTTGATCCAA
 901 GGTTTCAATT ACAGAACTCC AAATGACGAG CCCTTGGATA TGAAGGAAGG TGCAGGCATA
 961 ACTATACGTA AGGTAAATCC TGTGGAACTG ATAATAACGC CTCGCCTGGC ACCTGAGCTT
1021 TATTAAAACC TAAGATGTTT CATCTTGGTT GATCATTGTT TAATAC
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SEQ. ID. NO. 466

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  1 INLTDWLEEL NFGLIVKMIA GKNYESGKGD EQVERFKNAF KDFMVLSMEF VLWDAFPIPL
 61 FKWVDFQGHI KAMKRTFKDI DSVFQNWLEE HINKREKMEV NAEGNEQDFI DVVLSKMSNE
121 YLGEGYSRDT VIKATVFSLV LDAADTVALH INWGMALLIN NQKALTKAQE EIDTKVGKDR
181 WVEESDIKDL VYLQAIVKEV LRLYPPGPLL VPHENVEDCV VSGYHIPKGT RLFANVMKLQ
241 RDPKLWSDPD TFDPERFIAT DIDFRGQYYK YIPFGSGRRS CPGMTYALQV EHLTMAHLIQ
301 GFNYRTPNDE PLDMKEGAGI TIRKVNPVEL IITPRLAPEL Y
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SEQ. ID. NO. 467
D132-AA5

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  1 ATGAGAATGG TAGCTGGAAA GAGATATTAT GGTGAAGAGG TAGATAACGA GGAGGCAAAC
 61 CATTTTCGGG AGCTTGTAGA AGAGGTTATT TCATATGGGG GTGCATCAAA TCCCACGGAT
121 TTCATGCCTG CAATATTTCG TTGCTTTTTC AGGAGTATGG AGAAGAATTT GGCCAGGCTT
181 GGTAGCAAAA TGGACGCGCT CTTGCAAGGC TTGATTGATG AACACCGTCG TGATAAAAGC
241 AGAAATTCCA TGATTGATCA TTTGCTTTCT CTGCAAGAAT CAGAACCAGA ATATTACTCT
301 GATCAAATCA TCAAAGGAAT AATATTGGTC ATGCTGAATG CGGGGACTGA AACATCATCT
361 GTAACAATAG AATGGGCAAT GTCTCTTTTA CTCAATCATC CAGAGGTGTT GGAAAAGGCC
421 AAAGCTGAAA TAGACGACCA TGTGGGTAAA GATCGTTTAG TGGATGAAGC AGATTTACCC
481 AAGCTGAAAT ACCTTCAAAG TATTATTTCA GAGACACTTC GATTGTACCC TGCAGGACCA
541 ATGCTAGTGC CTCATGGATC ATCTGATGAT TGCACTATCG CTGGGTTGCA CATTCCACGT
601 GGCACGATGC TATTGGTGAA TGCTTGGGCC ATCCACAGGG ACCCATTACT TTGGGAGGAT
661 CCAGAGAGCT TCAAGCCAGA AAGGTTTGAA GGTGTGCAAG TGGAATCATG GAAGCTATTG
721 CCATTTGGAA TGGGAAGGAG AGCGTGTCCA GGTTCTGGAC TTGCTCAACG TGTGGTTGGT
781 TTAGCTTTAG CATCTCTAGT GCAGTGTTTT GAGTGGAAAA GGGTAAGTGA AGAGGTGGTT
841 GATTTGACTG AAGGAAAAGG TCTCACCATG CCAAAAGCTG AGCCACTCAT GGCTAGGTGC
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901 GAAGCTCGTG ATATTCTTCA CAAAGTTGTT TCAGAAATAT CCTAACGTTT CAGAGTGTTT
961 CTTGCATTTT TTTAGTGCTC CATACCTCTA GTTT
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SEQ. ID. NO. 468

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  1 MRMVAGKRYY GEEVDNEEAN HFRELVEEVI SYGGASNPTD FMPAIFRCFF RSMEKNLARL
 61 GSKMDALLQG LIDEHRRDKS RNSMIDHLLS LQESEPEYYS DQIIKGIILV MLNAGTETSS
121 VTIEWAMSLL LNHPEVLEKA KAEIDDHVGK DRLVDEADLP KLKYLQSIIS ETLRLYPAGP
181 MLVPHGSSDD CTIAGLHIPR GTMLLVNAWA IHRDPLLWED PESFKPERFE GVQVESWKLL
241 PFGMGRRACP GSGLAQRVVG LALASLVQCF EWKRVSEEVV DLTEGKGLTM PKAEPLMARC
301 EARDILHKVV SEIS
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SEQ. ID. NO. 469

D223-BB10

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   1 CTCCTTTGCC GCGATATGAA CTTGGATACT TCCCAGACTG TCTTCGTTGG TCCATACTTA
  61 AACGAAGATT CCAGAAAGCA GTTCAATGTT GACTACAATT ACTTCAATGT TGGGTTAATG
 121 AAACTCCCTG TTGATTTACC TGGTTTCGCC TTCAGAGATG CTAGGTTAGC TGTTGGGAGA
 181 CTAGTCGACA CGCTTTCCGT TTGTGCAGCA CAGAGCCAAA TTAAGATGCG AGGTGACGAA
 241 GAACCCACTT GCTTGATTGA TTTTTGGATG CAGGAGAATT TCAGAGAGAT TCAGGAAGCT
 301 AAGATTAATG GTTCACAAAA GCCGTTTGAG TATACCAGTA AGCAACTTGG TGGCTTCTTA
 361 TTTGACTTCC TCTTTGCGGC TCAAGATGCT TCTACTTCAT CTCTGTTATG GGCAATGGTG
 421 CTTTTGGAAT CTCACCCGCA AGTTCTGGAG AGAGTCCGAG CCGAAGTGGC GAAATTCTGG
 481 TCGCCAGAAT CTGAGCAGCC GTTGACGGCG GAGATGCTTA GGGAAATGAA GTACCTGGAG
 541 GCGGTGGCGC GTGAGGTTGT TAGGATCAGA ACTCCGGCGA CTTTGGTGCC GCACATTGCC
 601 GGCGAAGAAT TCCGGTTAAC TGATGATTAT GTTATTCCAA AGGGGACTAT TGTTTTCCCT
 661 TCGGTTTTTG ACTCGTCTTT CCAGGGGTTT CCTGAACCGG AGAAGTTTGA CCCGGACCGG
 721 TTCACAGAGG AGAGGCAAGA GGAACGGGTT TACAAGAAGA ATTATCTAGC ATTTGGAGCT
 781 GGGCCCCATG GATGTGTGGG ACAGAGGTAT GCTATAAACC ATTTGATGCT CTTTATTGCG
 841 TTGTTCACGG CTCTGATTGA TTTCAAGAGG CACAAAACGG ACGGCTGTGA TGATATCGCG
 901 TATATTCCAA CCATTGCTCC AAAGGATGAT TGTAAAGTGT TCCTTTCACA GAGGTGCACT
 961 CGATTCCCAT CTTTTTCATG AACTAATTGC GCCTTTTATT TAATTCTGAT CCTCAAATTG
1021 GTCCCATTGG
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SEQ. ID. NO. 470

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  1 LLCRDMNLDT SQTVFVGPYL NEDSRKQFNV DYNYFNVGLM KLPVDLPGFA FRDARLAVGR
 61 LVDTLSVCAA QSQIKMRGDE EPTCLIDFWM QENFREIQEA KINGSQKPFE YTSKQLGGFL
121 FDFLFAAQDA STSSLLWAMV LLESHPQVLE RVRAEVAKFW SPESEQPLTA EMLREMKYLE
181 AVAREVVRIR TPATLVPHIA GEEFRLTDDY VIPKGTIVFP SVFDSSFQGF PEPEKFDPDR
241 FTEERQEERV YKKNYLAFGA GPHGCVGQRY AINHLMLFIA LFTALIDFKR HKTDGCDDIA
301 YIPTIAPKDD CKVFLSQRCT RFPSFS
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SEQ. ID. NO. 471

D245-AA8

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  1 GATCGTTTAG TGGATGAAGC AGATTTACCC AAGCTGAAAT ACCTTCAAAG TATTATTTCA
 61 GAGACACTTC GATTGTACCN TGCAGCACCA ATGCTAGTGC CTCATGAATC ATCTGATGAT
121 TGCACGGTCG CTGGCTTCCA CATTCCTCGT GGCACGATGC TATTGGTGAA TGCTTGGGCC
181 ATCCACAGGG ACCCCTTACT TTGGGAGGAC CCAGAGAGCT TCAAGCCAAA AAGGTTTGAA
241 GGTGTGCAAG CCGAATCATG GAAGCTATTG CCATTTGGAA TGGGAAGGAG AGCGTGCCCA
301 GGTTCTGGAC TTGCTCAATG TGTGGTTGGT TTAGCTTTAG CAACTCTAGT GCAGTGTTTT
361 GAGTGGAAAA GGGTAAGCGA AGAGGTGGTT GATTTGACGG AAGGAAAAGG TCTCACTATG
421 CCAAAACCCG AGCCACTCAT GGCTAGGTGC GAAGCTCGTG ACATTTTTCA CAAAGTTCTT
481 TCAGAAATAT CTTAATGTTT TGGGAGTCTG AATTAATAAT GTAAAATGTA TTTTCATTTT
541 CTCATATAAT ATTGCACTAT CTACATTTCT GATATGTCAT TGAGATACTC CGG
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SEQ. ID. NO. 472

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  1 DRLVDEADLP KLKYLQSIIS ETLRLYXAAP MLVPHESSDD CTVAGFHIPR GTMLLVNAWA
 61 IHRDPLLWED PESFKPKRFE GVQAESWKLL PFGMGRRACP GSGLAQCVVG LALATLVQCF
121 EWKRVSEEVV DLTEGKGLTM PKPEPLMARC EARDIFHKVL SEIS
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SEQ. ID. NO. 473
D246-AE12
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    1 GAGGACGATC TGCATAAAAT GCCATACTTG AGAGCAGTGA TCTTAGAGGG TCTTAGGCGA
   61 CACCCGCCTG GTCACTTTGT GCTGCCACAT ACGGTGACAG AGGAAGTAGA ACTGAATGGC
  121 TATGTTGTCC CGAAGAATGC CACCATCAAT TTCATGGTTG CAGACATGGG TTTGGACCCA
  181 AAGGTGTGGG AGGATCCCTT GGAATTCAAG CCAGAGAGGT TCTTAATGGA GGGATCAGAT
  241 AAGGAAGGGT TCGATATAAC AGGAAGTAGA GAGATCAAGA TGATGCCATT TGGCGCTGGT
  301 AGGAGAATTT GCCCAGGCTA TGCTTTGGCT ATGCTTCATC TAGAGTACTT TGTGGCTAAT
  361 TTGGTTTGGC ATTTTCGATG GGAGGCTGTG GAGGGAGATG ATGTTGATCT TTCAGAAAAG
  421 CTAGAATTCA CCGTTGTGAT GAAGAATCCA CTTCGAGCTC GTATCTGCCT CAGAGTTAAC
  481 TCTATTTGAA TTTGGTAATT ACTAGTTCTT TCTATTTGCA TTGTTCCCTG TTGATGGACT
  541 TCCCCCATAT AGTACTGGAA GTTAGAGGGA G
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SEQ. ID. NO. 474
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    1 EDDLHKMPYL RAVILEGLRR HPPGHFVLPH TVTEEVELNG YVVPKNATIN FMVADMGLDP
   61 KVWEDPLEFK PERFLMEGSD KEGFDITGSR EIKMMPFGAG RRICPGYALA MLHLEYFVAN
  121 LVWHFRWEAV EGDDVDLSEK LEFTVVMKNP LRARICLRVN SI
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SEQ. ID. NO. 475
D279-AD1
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    1 GCAGTGCTGA CTTGGCGTAC GAAGCTTTAA TTGAAAAGGG TCAAATTTTC GCTACCCGCC
   61 CGAGTGAGAC CCCGACCCGA ACCATTTTCA GTTGCAACAA GTTCAGTGTC AATGCAGCAA
  121 TTTACGGGCC ACTTTGGCGA TCCCTGAGAA GAAATATGGT CCAAAATATG CTTAGTTCGA
  181 GTAGAGTGAA AGAATTTCGT GATTGTAGAG AAATGGCAAT GGATAAGTTG ATTGAAAGGA
  241 TACATGCAGA TGCTAAGGCC AATAACGATA TCGTTTGGGT GCTGAAAAAC GCGCGTTTCG
  301 CGGTGTTTTA TATACTTTTG ACTATGTGTT TTGGTGTTGA AATGGATGAG AAAATGATTG
  361 AAACCGTTGA TCAAATGATG AAGGATGTGC TAATGGAGCT TCATCCAAGA ATAGATGATT
  421 TTCTTCCTAT ATTGAGCTTG TTTGTTGGTT ATAAACAACG TAAGAGAGTT CACGAAGTTC
  481 GCAAGAGACA AATAGAAACA CTTGTCCCTT TGATCGAGAA ACGTCGAAGA GCAATACAAA
  541 ATCCTGGGTA CGATAAGACA GTTGCCTCGT TTTCGTACTT AGATACTTTA TTTGATGTTA
  601 AGGTCGAAGG TACAAAGTCA GGACCAACGA ATCCGGAGCT TGTAACACTA TGTTCAGAGT
  661 TCTTGAATGG TGGGACCGAC ACAACCGCTA CCGCAATAGA GTGGGCCATA GGGAGAATGA
  721 TCGAAAATCC AAGCATACAG AAGAGAATAT ACGAAGAGAT TAGAAATACA GTGGGTGACA
  781 GAAAGATTGA CGAAAAGGAT ATGGATAAGA TGCCTTATTT AAACGCCGTT GTAAAGGAGC
  841 TTTTACGTAA ACATCCTCCT ACGTACGTTA CATTTACCCA TGCAGTAACG GAGCCAACAA
  901 CATTGGGTGG GTATGACATA CCCACATATG CTAATGTAGA GTTTTTTGTA CCCGGGATCT
  961 CGGATGACCC GAAAGTTTGG TCTGATCCGG AAAAGTTTGA CCCGGATAGG TTTCTATCCG
 1021 GGCGGGAGGA CGCTGATATA ACGGGTGTGA CCGGGGTAAA GATGATGCCA TTTGGGGTCG
 1081 GGCGGAGGAT TTGTCCGGGC TTGGGCTTGG CAACGGTGCA TGTGAATTTG ATGTTGGCCC
 1141 GAATGATTCA GAATTTGAA TGGTCCGCTT ACCCGGAAAA TAGGAAAGTG GATTTTACTG
 1201 AGAAATTGGA ATTTACTGTG GTGATGAAAA ACCCTTTAAG AGCTAAGGTC AAGCCAAGAA
 1261 TGCAAGTGGT GTAATTCATT AAGATTATAA GTCC
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SEQ. ID. NO. 476
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    1 SADLAYEALI EKGQIFATRP SETPTRTIFS CNKFSVNAAI YGPLWRSLRR NMVQNMLSSS
   61 RVKEFRDCRE MAMDKLIERI HADAKANNDI VWVLKNARFA VFYILLTMCF GVEMDEKMIE
  121 TVDQMMKDVL MELHPRIDDF LPILSLFVGY KQRKRVHEVR KRQIETLVPL IEKRRRAIQN
  181 PGYDKTVASF SYLDTLFDVK VEGTKSGPTN PELVTLCSEF LNGGTDTTAT AIEWAIGRMI
  241 ENPSIQKRIY EEIRNTVGDR KIDEKMDKM PYLNAVVKEL LRKHPPTYVT FTHAVTEPTT
  301 LGGYDIPTYA NVEFFVPGIS DDPKVWSDPE KFDPDRFLSG REDADITGVT GVKMMPFGVG
  361 RRICPGLGLA TVHVNLMLAR MIQEFEWSAY PENRKVDFTE KLEFTVVMKN PLRAKVKPRM
  421 QVV
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SEQ. ID. NO. 477
D282-AA10
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   1 ACAGCATCTT GTGCTGCCAT AATAATTACT CTAGTGGTGT GTATATGGAG AGTGCTGAAT
  61 TGGGTTTGGT TCAGACCAAA GAAGCTGGAA AAGCTACTGA GGAAACAAGG TCTCAAAGGC
 121 AATTCCTACA GGATTTTGTA TGGGGATATG AAGGAGCTTT CTGGTATGAT TAAGGAAGCT
 181 AACTCCAAAC CCATGAATCT TTCTGATGAT ATTGCCCCAA GATTGGTCCC TTTCTTTCTT
 241 GATACCATCA AGAAATATGG GAAAAAATCC TTTGTATGGT TGGGTCCAAA ACCGCTGGTT
 301 TTTGTCATGG ACCCCGAGCT TATAAAGGAA GTATTCTCCA AAAACTATCT GTATCAAAAG
 361 CCTCATTCAA ATCCATTAAC CAAGTTACTG GCACAAGGAC TTGTAAGCCA AGAGGAAGAC
 421 AAATGGGCCA AACATAGAAA AATCGTCACT CCTGCCTTCC ACCTGGAGAA GCTAAAGGTT
 481 TGTAATTGCA ATGGATTCTC CGTAAGCAGT TCATTTTTAT CTTTTCTTTC ATCGTAACAG
 541 AAACTTACTC TTGATTGTGA TTCTTTTTTG AGGTACTTGT TTGGAACCAT TTTGTATTCC
 601 TAATTACAAA GTCGGAACAT TTTGAATAAG TGTCCCTTCA TTGACTTTCT CTTAACCATT
 661 TCTTAAACAG CATATGCTTC CAGCTTTTTG TTTGAGCTGT ACTGAGATGC TGAGCAAATG
 721 GGAAGACATT GTTGCAGTTG AGGGCTCACA TGAGATAGAT ATATGGCCTG CCTTCAACA
 781 ATTAACTAGT GATGTGATCT CTCGGACAGC CTTTGGCAGT AGCTATGAAG CAGGTAGAAG
 841 GATATTTGAA CTTCAAAAGG AACAAGCTCA ATTTCTTATG GAAGCTATAC GCTCCGTTTA
 901 TATTCCAGGC TGGAGGTTTT TGCCAACAAA GAGGAACAGA AGAATGAAGG AAATTGAAAA
 961 GGATGTTCAA GCCTTAGTTA AAGGTATTAT TGATAAAAGA GTAAAGTCAA TGAAAGCAGG
1021 AGAGGTGAAT AATGAGGATC TGCTTGGTAT ATTGCTGGAA TCTAATTTTA AAGAAATTGA
1081 ACAGCATGGA AACAAGGATT TTGGAATGAG CATTGAAGAA GTCATTCAAG AATGCAAGTT
1141 ATTCTATTTT GCTGGCCAAG AAACTACATC AGTGTTGCTT GTATGGACTC TAATATTGCT
1201 GAGCAGGCAT CAGGATTGGC AAGCACTGGC CAGAGAAGAG GTGTTGCAAG TCTTTGGGAA
1261 TCAGAAACCA GATTTTGATG GATTAAATCG TCTAAAAATT GTTACAATGA TCTTGTACGA
1321 GTCTTTAAGG CTCTATCCCC CAGTAGTGAC ACTTACCCGA AGGCCTAAGG AAGACACTGT
1381 ATTAGGAGAT GTATCTCTAC CAGCAGGTGT GTTAATCTCC TTACCAGTGA TCTTATTGCA
1441 TCACGACGAA GAGATATGGG GTAAAGATGC AAAGAAGTTC AAGCCAGAGA GATTCAGAGA
1501 TGGAGTCTCA AGTGCAACAA AGGGTCAAGT CACTTTTTTC CCATTTACTT GGGGTCCCAG
1561 AATATGCATT GGACAAAATT TTGCCATGTT AGAAGCAAAG ACTACTTTGG CTATGATCCT
1621 ACAACGCTTC TCCTTTGAAC TGTCTCCATC TTATGCACAT GCTCCTCAGT CCATAATAAC
1681 TTTGCAACCC CAGTATGGTG CTCCACTTAT TTTGCATAAA ATATAGTTTA TTACTTGTAA
1741 GTAGTGTCTC GTTTTATGTT AAGCATGAGT CCAAAATGTT AAGGCTTGTA GAACTGCAAA
1801 ATGGGAATGA ATCACTAGTG AATTC
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SEQ. ID. NO. 478
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   1 KQHMLPAFCL SCTEMLSKWE DIVAVEGSHE IDIWPGLQQL TSDVISRTAF GSSYEAGRRI
  61 FELQKEQAQF LMEAIRSVYI PGWRFLPTKR NRRMKEIEKD VQALVKGIID KRVKSMKAGE
 121 VNNEDLLGIL LESNFKEIEQ HGNKDFGMSI EEVIQECKLF YFAGQETTSV LLVWTLILLS
 181 RHQDWQALAR EEVLQVFGNQ KPDFDGLNRL KIVTMILYES LRLYPPVVTL TRRPKEDTVL
 241 GDVSLPAGVL ISLPVILLHH DEEIWGKDAK KFKPERFRDG VSSATKGQVT FFPFTWGPRI
 301 CIGQNFAMLE AKTTLAMILQ RFSFELSPSY AHAPQSIITL QPQYGAPLIL HKI
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SEQ. ID. NO. 479
D295-AA1
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   1 CATCAACGAG CACAAGAAAA ATCTTGCAGC TGGCAAGAGT AATGGTGCAT TAGGAGGTGA
  61 AGATCTAATT GATGTCCTAC TAAGACTTAA GAATGATACA AGTCTTCAAT TTCCCATCAC
 121 CAACAACAGT ATCAAAGCTG TTATTGTTGA CATGTTTGCT GCCGGAACGG AAACTTCATC
 181 AACAACAACT GTATGGGCTA TGGCTGAAAT GATGAAGAAT CCAAGTGTAT TCACCAAAGC
 241 TCAAGCAGAA GTGCGAGAAG CCTTTAGGGA CAAAGTATCT TTTGATGAAA CGATGTGGA
 301 GGAGCTGAAA TACTTAAAGT TAGTCATTAA AGAAACTTTG AGACTTCATC CACCCTCTCC
 361 ACTTTTGGTC CCAAGAGAAT GCAGGGAAGA CACAGATATA AACGGCTACA CTATTCCTGC
 421 GAAGACCAAA GTTATGGTTA TGTTTGGGC ATTGGGAAGA GATCCAAAAT ATTGGGATGA
 481 CGCCGAAAGC TTTAAGCCAG AGAGATTTGA GCAATGCTCT ATGGATTTTT TTGGTAATAA
 541 TTTTGAGTTT CTTCCCTTTG GTGGTGGACG GAGAATTTGT CCTGGAATGT CATTTGGTTT
 601 AGCTAATCTT TACTTGCCAT GGCCCAATT GCTGTATCAC TTCGACTGGA AACTCCCAAC
 661 TGGAATCAAG CCAAGAGACT GGACTTGAC TGAATTATCT GGAATAACTA TTGCTAGAAA
 721 GGGTGACCTT TACTTAAATG CCACTCCTTA TCAACCGTCG AGACTAATTT AATATTGGCA
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 781 TCAACTTTTT AAATTTTCTT CATCAACCTC ATTATTAATG TACAATAATC TTTCTTCTGT
 841 TGTTGTAGGC TTTATCGATT TCCAATACAT GTATTCTTTA TTTAAAAATG TATCACATTC
 901 CATGTATAAA AAAAAAAAAA
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SEQ. ID. NO. 480

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   1 INEHKKNLAA GKSNGALGGE DLIDVLLRLK NDTSLQFPIT NNSIKAVIVD MFAAGTETSS
  61 TTTVWAMAEM MKNPSVFTKA QAEVREAFRD KVSFDENDVE ELKYLKLVIK ETLRLHPPSP
 121 LLVPRECRED TDINGYTIPA KTKVMVNVWA LGRDPKYWDD AESFKPERFE QCSMDFFGNN
 181 FEFLPFGGGR RICPGMSFGL ANLYLPLAQL LYHFDWKLPT GIKPRDLDLT ELSGITIARK
 241 GDLYLNATPY QPSRLI
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SEQ. ID. NO. 481
D101A-AE2

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   1 AAATAATGGA TTATCATATT TCTTTCCATT TTCAAGCTCT TTTAGGGCTT TTAGCCTTTG
  61 TGTTCTTGTC TATTATCTTA TGGAGAAGAA CACTCACTTC AAGAAAATTA GCCCCTGAAA
 121 TCCCAGGGGC ATGGCCTATT ATAGGCCATC TTCGTCAGCT GAGTGGTACT GATAAGAATA
 181 TCCCATTTCC CCGAATATTG GGCGCTTTGG CAGATAAATA TGGACCTGTC TTCACACTGA
 241 GAATAGGGAT GTACCCCTAT TTGATTGTCA ACAATTGGGA AGCAGCTAAG GATTGTCTCA
 301 CAACGCATGA TAAGGACTCC GCTGCCCGAC CAACTTCTAT GGCTGGTGAA AGCATCGGGT
 361 ACAAGTATGC GAGGTTTACT TATGCTAATT TTGGTCCTTA TTATAACCAA GTGCGCAAAC
 421 TAGCCCTACA ACATGTACTC TCGAGTACTA AACTCGAGAA AATGAAACAC ATACGTGTTT
 481 CTGAATTGGA AACTAGCATC AAAGAATTAT ATTCTTTGAC GCTGGGCAAA AACAACATGC
 541 AAAAAGTGAA TATAAGTAAA TGGTTTGAAC AATTGACTTT AAACATAATC GTGAAGACAA
 601 TTTGTGGCAA GAGATATAGC AACATAGAGG AGGATGAAGA GGCACAACGT TTCAGAAAGG
 661 CATTTAAGGG CATCATGTTT GTTGTAGGGC AAATTGTTTT ATATGACGCA ATTCCATTCC
 721 CATTGTTCAA ATACTTTGAT TTCCAAGGTC ATATACAATT GATGAACAAA ATTTATAAAG
 781 ACTTAGATTC TATTCTTCAA GGATGGTTGG ATGATCATAT GATGAACAAG GATGTAAACA
 841 ATAAGGATCA AGATGCCATA GATGCCATGC TTAAGGTAAC ACAACTTAAT GAATTCAAAG
 901 CCTATGGTTT TTCTCAGGCC ACTGTGATCA AGTCGACAGT CTTGAGTTTG ATCTTAGATG
 961 GAAATGACAC AACCGCTGTT CATTTGATAT GGGTAATGTC CTTATTACTG AACAATCCAC
1021 ATGTTATGAA ACAAGGCCAA GAAGAGATAG ACATGAAAGT GGGTAAAGAG AGGTGGATTG
1081 AAGATACTGA CATAAAAAAT TTAGTGTACC TTCAGGCTAT CGTTAAAGAG ACATTGCGCT
1141 TGTATCCACC TGTTCCTTTT CTTTTACCAC ACGAAGCAGT GCAAGATTGT AAAGTGACTG
1201 GTTACCACAT TCCTAAAGGT ACTCGTCTAT ATATCAATGC GTGGAAAGTA CATCGCGATC
1261 CTGAAATTTG GTCAGAGCCC GAAAAGTTTA TGCCCAATAG ATTCTTGACT AGCAAAGCAA
1321 ATATAGATGC TCGCGGTCAA AATTTTGAAT TTATACCGTT TGGTTCTGGG AGACGGTCAT
1381 GTCCAGGGAT AGGT
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SEQ. ID. NO. 482

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   1 MDYHISFHFQ ALLGLLAFVF LSIILWRRTL TSRKLAPEIP GAWPIIGHLR QLSGTDKNIP
  61 FPRILGALAD KYGPVFTLRI GMYPYLIVNN WEAAKDCLTT HDKDSAARPT SMAGESIGYK
 121 YARFTYANFG PYYNQVRKLA LQHVLSSTKL EKMKHIRVSE LETSIKELYS LTLGKNNMQK
 181 VNISKWFEQL TLNIIVKTIC GKRYSNIEED EEAQRFRKAF KGIMFVVGQI VLYDAIPFPL
 241 FKYFDFQGHI QLMNKIYKDL DSILQGWLDD HMMNKDVNNK DQDAIDAMLK VTQLNEFKAY
 301 GFSQATVIKS TVLSLILDGN DTTAVHLIWV MSLLLNNPHV MKQGQEEIDM KVGKERWIED
 361 TDIKNLVYLQ AIVKETLRLY PPVPFLLPHE AVQDCKVTGY HIPKGTRLYI NAWKVHRDPE
 421 IWSEPEKFMP NRFLTSKANI DARGQNFEFI PFGSGRRSCP GIG
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SEQ. ID. NO. 483
D108-AA4

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   1 AATAGGCCAA AATATATGGA AGGAGATATT GTTGATCTTT TGCTACAATT GAAGAAAGAA
  61 CAATCAACAC CAATTGATCT TACTTTGGAG GATATAAAAG GAATTCTCAT GAATGTGTTG
 121 GTTGCAGGAT CAGACACTAG TGCAGCTGCT ACTGTTTGGG CAATGACAGC CTTGATAAAA
 181 AATCCAAAAA CCATGAAAAA AGTTCAATCA GAAATCAGAA AATCAATAGG GAAGAAAGGA
 241 ATTGTAAATG AAGAAGATGT CCAAAACATG CCTTATCTCA AAGCAGTGAT AAAGGAAATA
 301 TTTAGATTGT ATCCACCAGT TCCACTTCTA GTTCCAAGAG AATCAATGGA AAAAACCATA
 361 TTAGAAGGTT ATGAAATTCG GCCAGGAACC ATAGTTCATG TTAACGCTTG GGCTATTGCG
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421 AGGGATCCTG AAATATGGGA AAATCCAGAA GAATTTATAC CTGAGAGATT ACTTGAATAG
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SEQ. ID. NO. 484
```
  1 NRPKYMEGDI VDLLLQLKKE QSTPIDLTLE DIKGILMNVL VAGSDTSAAA TVWAMTALIK
 61 NPKTMKKVQS EIRKSIGKKG IVNEEDVQNM PYLKAVIKEI FRLYPPVPLL VPRESMEKTI
121 LEGYEIRPGT IVHVNAWAIA RDPEIWENPE EFIPERLLE
```

SEQ. ID. NO. 485
D124-AC5(5')
```
  1 GCAAGTTCTT TCACTAGTTG TAATAGTCCT ATACATTCTT CAACAATTAC ACAACAAATT
 61 CATGAAAAAG AAAAAGAAAC TTCCTCCAGG TCCAAAAGGG TTTCCAATTA TTGGAAATCT
121 ATTTATGATT GGCAAAAACC TACATCAAGA TCTTTATCAA ATAGCCAAAA AACATGGTCC
181 TATAATGAGT ATGAGATTTG GTCTAGTTCC TATCATTGTT GCTTCATCTC CTCATGCTGC
241 TGAACTATTC TTGAAAAAAC ATGATCTTGT TTTTGCTAGT AGACCATATA ATACAGCTGC
301 TCAATATATT GGATATAATC AAAGAAATCT TACTTTTGGT AAATATGGTC CTTATTGGCG
361 AAATATGCGA AAATTATGTA CGTTAGAATT GCTTAGTAGT CTCAAGATCA ATTCATTTCA
421 GGCCATGAGA AAACAAGAAA TTGGAAATTT TGTGACTTTT CTCAATAGAG CAGCTTCTAA
481 TGGTATTGAG GTTGATATTA GTGCTAAACT TGCTTCATTA AGTGCAAATA TGGCTTGTTT
541 AATGGTATTT GGGAAGAAAT ATATGGATGA AGAATTTGAT GAAAGGGGTT TTAAAGATGT
601 AATTCAAGAG ACATTAGTTA TAACTGCAAC ACCAAATATT GGTGAGTTTT TTCCTTTTCT
661 TGATAGGTTT GATTTGCAGG GATTTGTTCC ACGTATGAAA AAATTGGCAA AGATTTTTGA
721 TGATTTTTTC GAGAAA
```

SEQ. ID. NO. 486
```
  1 QVLSLVVIVL YILQQLHNKF MKKKKKLPPG PKGFPIIGNL FMIGKNLHQD LYQIAKKHGP
 61 IMSMRFGLVP IIVASSPHAA ELFLKKHDLV FASRPYNTAA QYIGYNQRNL TFGKYGPYWR
121 NMRKLCTLEL LSSLKINSFQ AMRKQEIGNF VTFLNRAASN GIEVDISAKL ASLSANMACL
181 MVFGKKYMDE EFDERGFKDV IQETLVITAT PNIGEFFPFL DRFDLQGFVP RMKKLAKIFD
241 DFFEK
```

SEQ. ID. NO. 487
D124-AC5(3')
```
  1 CGTGAATCCA TTGAAGATTG TATTGTTGAT GGTTTTGATA TACCTAAAGG TTCAAGAATT
 61 TTAGTAAATA CTTGGGCAAT TGGAAGAGAT CCAGAAGCCT GGCCCGAACC CGAGAAGTTC
121 AAGCCAGAAA GGTTTGTTGG TAGCAACATC GATCTTAGGG GACGTGATTT TCAACTTTTA
181 CCATTTGGCT CAGGGAGAAG GAGTTGCCCC GGATTACAAT TAGGGCTCAC CATTGTTCGC
241 TTGGTGTTAG CGCAATTGGT TCATTGCTTT GATTGGGAAC TACCAAATGG TATGGCGCCA
301 GAAGATTTAG ATATGACTGA GAAATTTGGT TTAGTTACAG CTAGAGCTCA ACATTTAGTT
361 GCTATTCCTA CTTATCAATT GCATGTGTAG TTGATGTGAA TCTTCCTAGA AGCTTAATTA
421 AGTAAAAATG AAGATCTTTG TCCTCTATAT TTTTCATTGT ATGACAAAAT TTGGTAACAT
481 TTACTACATA TGGAGCTACC ACTAAAAAA
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SEQ. ID. NO. 488
```
  1 RESIEDCIVD GFDIPKGSRI LVNTWAIGRD PEAWPEPEKF KPERFVGSNI DLRGRDFQLL
 61 PFGSGRRSCP GLQLGLTIVR LVLAQLVHCF DWELPNGMAP EDLDMTEKFG LVTARAQHLV
121 AIPTYQLHV
```

SEQ. ID. NO. 489
D141-AD7
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  1 TCGACGACTA TAATTTGGGC ATTAGCTGAA ATGATGAAGA AACCAAGTGT TTTAGCAAAG
 61 GCACAAGCTG AAGTAAGGCA AGCTTTGAAG GAGAAAAAAG GTTTTCAACA GATTGATCTT
121 GATGAGCTAA AATATCTCAA GTTAGTAATC AAAGAAACCT TAAGAATGCA CCCTCCAATT
181 CCTCTATTAG TTCCTAGAGA ATGTATGGAG GATACAAAGA TTGATGGTTA CAATATACCT
241 TTCAAAACAA GAGTCATAGT TAATGCATGG GCAATCGGAC GAGATCCAGA AGTTGGGAT
301 GACCCCGAAA GCTTTATGCC AGAGAGATTT GAGAATAGTT CTATTGACTT TCTTGGAAAT
361 CATCATCAGT TTATACCATT TGGTGCAGGA AGAAGGATTT GTCCGGGAAT GCTATTTGGT
421 TTAGCTAATG TTGGACAACC TTTAGCTCAG TTACTTTATC ACTTCGATTG GAAACTCCCT
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11

481 AATGGACAAA GTCATGAGAA TTTCGACATG ACTGAGTCAC CTGGAATTTC TG

SEQ. ID. NO. 490
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  1 STTIIWALAE MMKKPSVLAK AQAEVRQALK EKKGFQQIDL DELKYLKLVI KETLRMHPPI
 61 PLLVPRECME DTKIDGYNIP FKTRVIVNAW AIGRDPESWD DPESFMPERF ENSSIDFLGN
121 HHQFIPFGAG RRICPGMLFG LANVGQPLAQ LLYHFDWKLP NGQSHENFDM TESPGIS
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SEQ. ID. NO. 491
D148-AD1
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   1 TGCTCTTTCT ACTCTTTGTA GCCCTTCCTT TCATTCTTAT TTTTCTTCTT CCTAAATTCA
  61 AAAATGGTGG AAATAACAGA TTGCCACCAG GTCCTATAGG TTTACCATTC ATTGGAAATT
 121 TGCATCAATA CGATAGTATA ACTCCTCATA TCTATTTTTG GAAACTTTCA AAAAAATATG
 181 GCAAATCTTT CTCATTAAAA CTTGCTTCTA CTAATGTGGT AGTAGTTTCT TCAGCAAAAT
 241 TAGCAAAAGA AGTATTGAAA AAACAAGATT TAATATTTTG TAGTAGACCA TCTATTCTTG
 301 GCCAACAAAA ACTGTCTTAT TATGGTCGTG ATATTGCTTT TAATGATTAT TGGAGAGAAA
 361 TGAGAAAAAT TTGTGTTCTT CATCTTTTTA GTTTAAAAAA AGTTCAATTA TTTAGTCCAA
 421 TTCGTGAAGA TGAAGTTTTT AGAATGATTA AGAAAATATC AAAACAAGCT TCTACTTCAC
 481 AAATTATTAA TCTGAGTAAT TTAATGATTT CATTAACAAG TACAATTATT TGTAGAGTTG
 541 CTTTTGGTGT TAGGATTGAA GAAGAAGCAC ATGCAAGGAA GAGATTTGAT TTTCTTTTGG
 601 CCGAGGCACA AGAAATGATG GCTAGTTTCT TTGTATCTGA TTTTTTTCCC TTTTTAAGTT
 661 GGATTGATAA ATTAAGTGGA TTGACATATA GACTTGAGAG GAATTTCAAG GATTTGGATA
 721 ATTTTTATGA AGAACTCATT GAGCAACATC AAAATCCTAA TAAGCCAAAA TATATGGAAG
 781 GAGATATTGT TGATCTTTTG CTACAATTGA AGAAAGAGAA ATTAACACCA CTTGATCTCA
 841 CTATGGAAGA TATAAAAGGA ATTCTCATGA ATGTGTTAGT TGCAGGATCA GACACTAGTG
 901 CAGCTGCTAC TGTTTGGGCA ATGACAGCCT TGATAAAGAA TCCTAAAGCC ATGGAAAAAG
 961 TTCAATTAGA AATCAGAAAA TCAGTTGGGA AGAAAGGCAT TGTAAATGAA GAAGATGTCC
1021 AAAACATCCC TTATTTTAAA GCAGTGATAA AGGAAATATT TAGATTGTAT CCACCAGCTC
1081 CACTTTTAGT TCCAAGAGAA TCAATGGAAA AAACCATATT AGAAGGTTAT GAAATTCGGC
1141 CAAGAACCAT AGTTCATGTT AACGCTTGGG CTATAGCAAG GGATCCTGAA ATATGGGAAA
1201 ATCCAGATGA ATTTATACCT GAGAGATTTT TGAATAGCAG TATCGATTAC AAGGGTCAAG
1261 ATTTTGGGTT ACTTCCATTT GGTGCAGGCA GAAGAGGTTG CCCAGGTATT GCACTTGGGG
1321 TTGCATCCAT GGAACTTGCT TTGTCAAATC TTCTTTATGC ATTTGATTGG GAGTTGCCTT
1381 ATGGAGTGAA AAAAGAAGAC ATCGACACAA ACGTTAGGCC TGGAATTGCC ATGCACAAGA
1441 AAAACGAACT TTGCCTTGTC CCAAAAAATT ATTTATAAAT TATATTGGGA CGTGGATCTC
1501 ATGCTAGTTC TGTGAAGG
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SEQ. ID. NO. 492
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  1 LFLLFVALPF ILIFLLPKFK NGGNNRLPPG PIGLPFIGNL HQYDSITPHI YFWKLSKKYG
 61 KIFSLKLAST NVVVVSSAKL AKEVLKKQDL IFCSRPSILG QQKLSYYGRD IAFNDYWREM
121 RKICVLHLFS LKKVQLFSPI REDEVFRMIK KISKQASTSQ IINLSNLMIS LTSTIICRVA
181 FGVRIEEEAH ARKRFDFLLA EAQEMMASFF VSDFFPFLSW IDKLSGLTYR LERNFKDLDN
241 FYEELIEQHQ NPNKPKYMEG DIVDLLLQLK KEKLTPLDLT MEDIKGILMN VLVAGSDTSA
301 AATVWAMTAL IKNPKAMEKV QLEIRKSVGK KGIVNEEDVQ NIPYFKAVIK EIFRLYPPAP
361 LLVPRESMEK TILEGYEIRP RTIVHVNAWA IARDPEIWEN PDEFIPERFL NSSIDYKGQD
421 FGLLPFGAGR RGCPGIALGV ASMELALSNL LYAFDWELPY GVKKEDIDTN VRPGIAMHKK
481 NELCLVPKNY L
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SEQ. ID. NO. 493
D212-BC11
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  1 CTCATTATCC ATCACCTAAA ATGGAGAATT CTTGGGTTTT TCTAGCCTTG GCAGGGCTAT
 61 CTGCATTAGC TTTTCTCTGT AAAATAATCA CCTGTCGAAG ACCGGTTAAC CGGAAAATAC
121 CACCAGGTCC AAAACCATGG CCCATCATTG CAATTTGAA CCTACTTGGT CCTATACCAC
181 ATCAATCTTT TGACTTGCTT TCCAAAAAAT ATGGAGAGTT GATGCTGCTG AAATTTGGCT
241 CCAGGCCAGT TCTTGTTGCT TCATCTGCTG AAATGGCAAA ACAGTTTTTA AAAGTACATG
301 ATGCTAATTT CGCCTCCCGT CCTATGCTAG CTGGTGGAAA GTATACAAGC TATAACTATT
361 GTGACATGAC ATGGGCACCC TATGGTCCCT ATTGGCGCCA AGCACGACGA ATTTACCTTA
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421 ACCAGATATT TACTCCGAAA AGGCTAGACT CGTTCGAGTA CATTCGTGTT GAAGAAAGGC
481 AGGCCTTGAT TTCCCAGCTG AATTCCCTTG CTGGAAAGCC ATTTTTTCTC AAAGACCATT
541 TGTCGCGATT TAGCCTCTGC AGCATGACAA GGATGGTTTT GAGCAACAAG TATTTTGGTG
601 AATCAACAGT TAGAGTAGAA GATTTGCAGT ACCTGGTAGA TCAATGGTTC TTACTTAATG
661 GTGCTTTCAA CATTGGAGAT TGGATTCCAT GGCTCAGCTT CTTGGACCTA CAAGGCTATG
721 TGAAACAAAT GAAGGCTTTG AAAAGAACTT TTGATAAGTT CCACAACATT GTGCTAGATG
781 ATCACAGGGC TAAGAAGAAT GCAGAGAAGA ACTTTGTCCC AAAAGACATG GTTGATGTCT
841 TGTTGAAGAT GGCTGAAGAT CCTAATCTGG AAGTCAAACT CACTAATGAC TGTGTCAAAG
901 GGTTAATGCA GGATTTACTA ACTGGAGGAA CAGATAGCTT AACAGCAGCA GTGCAATGGG
961 CATTTCAAGA ACTTCTTAGA CAGCCAA
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SEQ. ID. NO. 494

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  1 MENSWVFLAL AGLSALAFLC KIITCRRPVN RKIPPGPKPW PIIGNLNLLG PIPHQSFDLL
 61 SKKYGELMLL KFGSRPVLVA SSAEMAKQFL KVHDANFASR PMLAGGKYTS YNYCDMTWAP
121 YGPYWRQARR IYLNQIFTPK RLDSFEYIRV EERQALISQL NSLAGKPFFL KDHLSRFSLC
181 SMTRMVLSNK YFGESTVRVE DLQYLVDQWF LLNGAFNIGD WIPWLSFLDL QGYVKQMKAL
241 KRTFDKFHNI VLDDHRAKKN AEKNFVPKDM VDVLLKMAED PNLEVKLTND CVKGLMQDLL
301 TGGTDSLTAA VQWAFQELLR QP
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SEQ. ID. NO. 495

D217-AB10

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  1 ATGATCGCTG GGAAAAATTA TGGATCCGGT AAAGGAGATG AACAAGTGGA GAGATTTGGG
 61 AAAGCGTTTA AGGATTTTAT AATTTTATCA ATGGAGTTTG TGTTATGGGA TGCTTTTCCA
121 ATTCCATTGT TCAAATGGGT GGATCTTCAA GGCCATGTTA AGGCCATGAA AAGGACATTT
181 AAGGATATAG ATTCTGTTTT TCAGAATTGG TTAGAGGAAC ATGTCAAGAA AAAAGAAAAA
241 ATGGAGGTTA ATGCAGAAGG AAATGAACAA GATTTCATTG ATGTGGTGCT TTCAAAAATG
301 AGTAATGAAT ATCTTGATGA AGGCTACTCT CGTGATACTG TCATAAAAGC AACAGTGTTT
361 AGTTTAGTCT TGGATGCTGC GGACACAGTT GCTCTTCACA TGAATTGGGG AATGGCATTA
421 TTGACAAACA ATCAACATGC CTTGAAGAAA GCGCAAGAAG AGATAGATAA AAAAGTTGGT
481 AAGGATAGAT GGGTAGAAGA GAGTGATATT AAGGATTTGG TATACCTCCA AACTATTGTT
541 AAAGAAGTGT TACGATTATA TCCACCGGGA CCTTTATTAG TACCCCATGA AAATGTAGAG
601 GATTGTGTTG TTAGTGGATA TCACATTCCT AAAGGGACTA GACTATTCGC GAACGTTATG
661 AAATTACAGC GCGATCCTAA ACTCTGGTCA AATCCTGATA AGTTCGATCC AGAGAGATTT
721 TTCGCTGCTG ATATTGACTT TCGTGGTCAA CACTATGAGT TTATCCCATT TGGTTCTGGA
781 AGACGATCTT GTCCGGGGAT GACTTATGCA ATGCAAGTGG AACACCTAAC AATCGCACAC
841 TTGATCCAGG GTTTCAATTA CAAAACTCCA AATGACGAGC CCTTGGATAT GAAGGAAGGT
901 GCAGGATTAA CTATACGTAA GGTAAATCCT ATAGAAGTGG TAATTACGCC TCGCCTGACA
961 CCTGAGCTTT ATTAAAATCT
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SEQ. ID. NO. 496

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  1 MIAGKNYGSG KGDEQVERFG KAFKDFIILS MEFVLWDAFP IPLFKWVDLQ GHVKAMKRTF
 61 KDIDSVFQNW LEEHVKKKEK MEVNAEGNEQ DFIDVVLSKM SNEYLDEGYS RDTVIKATVF
121 SLVLDAADTV ALHMNWGMAL LTNNQHALKK AQEEIDKKVG KDRWVEESDI KDLVYLQTIV
181 KEVLRLYPPG PLLVPHENVE DCVVSGYHIP KGTRLFANVM KLQRDPKLWS NPDKFDPERF
241 FAADIDFRGQ HYEFIPFGSG RRSCPGMTYA MQVEHLTIAH LIQGFNYKTP NDEPLDMKEG
301 AGLTIRKVNP IEVVITPRLT PELY
```

SEQ. ID. NO. 497

D220-BC6

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  1 GCAGTGATCT TAGAAGGTCT TAGGCGACAC CCGCCCGGTC ACTTTGTGCT GCCACATACG
 61 GTGACAGAGG AAGCAGAACT GAACGGCTAC GTCGTCCCAA GAATGCCAC CATCAATTTC
121 ATGGTTGCCG ACATGGGTTT GGACCCAAAG GTGTGGGAGG ATCCCTTGGA ATTTAAGCCA
181 GAGAGGTTCT TAATGGAGGG ATCAGATAAG GAAGGGTTTG ATATAACAGG AAGTAGAGAG
241 ATCAAGATGA TGCCATTTGG AGCTGGTAGG AGAATATGTC CTGGCTATGC TTTGGCTATG
301 CTTCATTTGG AATACTTTGT GGCTAATTTG GTTTGGCATT TTCGATGGGA TGCTGTGGAG
361 GGAGATGATG TTGATCTTTC AGAGAAGCTA GAATTCACCG TTGTGATGAA GAATCCTCTA
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421 CGAGCTCGTA TCTGCCCTAG AGTTAACTCT GTTTGAATTT GGTAATTACT AGTAGTTCTT
481 TCTATTTGCA TTGTTCCCTG TTGATGGACT TCC
```

SEQ. ID. NO. 498
```
  1 AVILEGLRRH PPGHFVLPHT VTEEAELNGY VVPKNATINF MVADMGLDPK VWEDPLEFKP
 61 ERFLMEGSDK EGFDITGSRE IKMMPFGAGR RICPGYALAM LHLEYFVANL VWHFRWDAVE
121 GDDVDLSEKL EFTVVMKNPL RARICPRVNS V
```

SEQ. ID. NO. 499
D225-AG9
```
  1 TTCGCATGGA TAGGCCCAGA ACCCAGGATT TTCGTAATGA AACCAGAATT GATAAAGGAA
 61 ATAGTAACGA ACAACACCAT CTTCAAAAAA CCAAAACCAG CCCCACTTGT CCAGCTTCTT
121 GTTAGTGGCA TCTCAAGTTA TGAGGACGAC AAATGGGCTA AGCACAGAAA AATTCTTAAC
181 ACTGCATTTT ACGCCGAGAA GTTGAAGTGT ATGCTGCCGG CAATGCACAC AAGCTGTGAA
241 GATATGATCA ACAAGTGGGA AATTCTACTC TCCGAAAACA AATCCTGCGA ATTGGACGTG
301 CATCCATATT TTGAAGATTT TACCAGTGAT GTGATTTCAA GAACAGCATT TGGAAGTAGT
361 TATGCAGAAG GAACAAGAAT ATTTCATCTT CAAAAAGAAC TAGCTGAACT CACACGCCA
```

SEQ. ID. NO. 500
```
  1 FAWIGPEPRI FVMKPELIKE IVTNNTIFKK PKPAPLVQLL VSGISSYEDD KWAKHRKILN
 61 TAFYAEKLKC MLPAMHTSCE DMINKWEILL SENKSCELDV HPYFEDFTSD VISRTAFGSS
121 YAEGTRIFHL QKELAELTR
```

SEQ. ID. NO. 501
D231-AF1
```
  1 ATGAGTTTAG TAAAATCAGT AGTGTATGAA GTATTAAGAA TTGAACCTCC AGTTCCATTC
 61 CAATATGGTA AAGCCAAAGA AGATATCATA ATCCAAAGCC ATGATTCAAC TTTCTTAGTC
121 AAGAAAGGTG AAATGATCTT TGGATATCAG CCTTTTGCTA CAAAAGATCC AAAGATTTTT
181 GACAAACCAG AGGAGTTTAT TCCGGAGAGG TTCATGGCCG AAGGGGAAAA ATTATTAAAG
241 TATGTGTATT GGTCAAATGC AAGAGAGACA GATGATCCAA CGGTGGACGA CAAACAATGC
301 CCAGCGAAAA ATCTTGTCGT GCTTTTGTGC AGGTTGATGT TGGTGGAGGT TTTCATGCGT
361 TACGACACAT TCACAGTGGA GTCAACAAAG CTCTTTCTTG GGTCATCAGT AACGTTCACG
421 ACTCTGGAAA AAGCGACATG AGTTTCAGAT ATCTTAATTG TAGGCTGCAA ATAATAATGT
481 GGTCATTCTG CAAATTATTG TACTTGTGCT GATGTACTTG ACTTCGAGTG GATATAATAA
541 TGCACTGTTT TTAGAAA
```

SEQ. ID. NO. 502
```
  1 MSLVKSVVYE VLRIEPPVPF QYGKAKEDII IQSHDSTFLV KKGEMIFGYQ PFATKDPKIF
 61 DKPEEFIPER FMAEGEKLLK YVYWSNARET DDPTVDDKQC PAKNLVVLLC RLMLVEVFMR
121 YDTFTVESTK LFLGSSVTFT TLEKAT
```

SEQ. ID. NO. 503
D232-AH5
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  1 GTTGGAACAA GTAGTTGGCA CAAACAGAAT GGTGGAAGAA TCAGATTTGG AAAAATTAGA
 61 TTACTTAGAT ATGGTTGTAA AAGAAGGTTT TAGGCTTCAC CCTGTTGCAC CACTATTACT
121 TCCTCGTGAA TCCATTGAAG ATTGTATTGT TGATGGTTTT GATATACCTA AAGGTTCAAG
181 AATTTTAGTA AATACTTGGG CAATTGGAAG AGATCCAGAA GCCTGGCCCG AACCCGAGAA
241 GTTCAAGCCA GAAAGGTTTG TTGGTAGCAA CATCGATCTT AGGGGACGTG ATTTTCAACT
301 TTTACCATTT GGCTCAGGGA GAAGGAGTTG CCCCGGATTA CAATTAGGGC TCACCATTGT
361 TCGCTTGGTG TTAGCGCAAT TGGTTCATT
```

SEQ. ID. NO. 504
```
  1 LEQVVGTNRM VEESDLEKLD YLDMVVKEGF RLHPVAPLLL PRESIEDCIV DGFDIPKGSR
 61 ILVNTWAIGR DPEAWPEPEK FKPERFVGSN IDLRGRDFQL LPFGSGRRSC PGLQLGLTIV
121 RLVLAQLVH
```

SEQ. ID. NO. 505
D240-BB8
```
  1 CTATATGGAG ACACAAAGGA GATGGCTGAG ATGACCAAAG AAGCCAAGTT TAAACCCATT
 61 AAACTCACTG ATGATATTCT CCCTCGGATC TTCCCTTTCT ACCATCATAC TTTCAACAAA
121 TATGGTAACC ATTGTTTCGC ATGGATAGGC CCAGAACCCA GGATTTTCGT AATGAAACCA
181 GAATTGATAA AGGAAATAGT AACGAACAAC ACCATCTTCA AAAAACCAAA ACCAGCCCCA
241 CTTGTCCAGC TTCTTGTTAG TGGCATCTCA AGTTATGAGG ACGACAAATG GGCTAAGCAC
301 GGAAAAATTC TTAACACTGC ATTTTACGCC GAGAAGTTGA AGTGTATGCT GCCGGCAATG
361 CACACAAGCT GTGAAGATAT GATCAACAAG TGGGAAATTC TACTC
```

SEQ. ID. NO. 506
```
  1 LYGDTKEMAE MTKEAKFKPI KLTDDILPRI FPFYHHTFNK YGNHCFAWIG PEPRIFVMKP
 61 ELIKEIVTNN TIFKKPKPAP LVQLLVSGIS SYEDDKWAKH GKILNTAFYA EKLKCMLPAM
121 HTSCEDMINK WEILL
```

SEQ. ID. NO. 507
D280-AA6
```
  1 TACGTACGTT ACATTTACCC ATGCAGTAAC GGAGCCAACA ACATTGGGTG GGTATGACAT
 61 ACCCACATAT GCTAATGTAG AGTTTTTTGT ACCCGGGATC TCGGATGACC CGAAAGTTTG
121 GTCTGATCCG GAAAAGTTTG ACCCGGATAG GTTTCTATCC GGGCGGGAGG ACGCTGATAT
181 AACGGGTGTG ACCGGGGTAA AGATGATGCC ATTTGGGGTC GGGCGGAGGA TTTGTCCGGG
241 CTTGGGCTTG GCAACGGTGC ATGTGAATTT GATGTTGGCC CGAATGATTC AAGAATTTGA
301 ATGGTCCGCT TACCCGGAAA ATAGGAAAGT GGATTTTACT GAGAAATTGG AATTTACTGT
361 GGTGATGAAA AATCCTTTAA GAGCTAAGGT CAAGCCAAGA ATGCAAGTGG TGTAATTCAT
421 TAAGATTATA AGTCCAAAAA TAAGC
```

SEQ. ID. NO. 508
```
  1 TYVTFTHAVT EPTTLGGYDI PTYANVEFFV PGISDDPKVW SDPEKFDPDR FLSGREDADI
 61 TGVTGVKMMP FGVGRRICPG LGLATVHVNL MLARMIQEFE WSAYPENRKV DFTEKLEFTV
121 VMKNPLRAKV KPRMQVV
```

SEQ. ID. NO. 509
D285-AD7
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  1 AGAAGAGATA GACATGAAAG TGGGTAAAGA GAGGTGGATT GAAGATACTG ACATAAAAAA
 61 TTTAGTGTAC CTTCAGGCTA TCGTTAAAGA GACATTGCGC TTGTATCCAC CTGTTCCTTT
121 TCTTTTACCA CACGAAGCAG TGCAAGATTG TAAAGTGACT GGTTACCACA TTCCTAAAGG
181 TACTCGTCTA TATATCAATG CGTGGAAAGT ACATCGCGAT CCTGAAATTT GGTCAGAGCC
241 CGAAAAGTTT ATGCCCAATA GATTCTTGAC TAGCAAAGCA AATATAGATG CTCGCGGTCA
301 AAATTTTGAA TTTATACCGT TTGGTTCTGG GAGACGGTCA TGTCCAGGGA TAGGTTTTGC
361 GACTTTAGTG ACACATCTGA CTTTTGGTCG CTTGCTTCAA GGTTTTGATT TTAGTAAGCC
421 ATCAAACACG CCAATTGACA TGACAGAAGG CGTAGGCGTT ACTTTGCCTA AGGTTAATCA
481 AGTTGAAGTT CTAATTATCC CTCGTTTACC TTCTAAGCTT TATTTATTTT GAAAGTGCAA
541 ATCATCAATC ATGGGTTGAG TAATTAGTGA TACT
```

SEQ. ID. NO. 510
```
  1 EEIDMKVGKE RWIEDTDIKN LVYLQAIVKE TLRLYPPVPF LLPHEAVQDC KVTGYHIPKG
 61 TRLYINAWKV HRDPEIWSEP EKFMPNRFLT SKANIDARGQ NFEFIPFGSG RRSCPGIGFA
121 TLVTHLTFGR LLQGFDFSKP SNTPIDMTEG VGVTLPKVNQ VEVLIIPRLP SKLYLF
```

SEQ. ID. NO. 511
D285-AH9
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  1 AACATTTGGC AATATAGTCT TCCTCCTCAG TTCTTGCCTC CTGTTCCTTA GAAATAATGG
 61 ATTATCATAT TTCTTTCCAT CTTCCAACTC TTTTTGGGCT TTTTGCCTTT GTGTTCTTGT
121 CTATTATCTT ATGGAGAAGA ACACTCAATT CAAGAAGATT AGCCCCTGAA ATCCCAGGGG
181 CATGGCCTAT TATAGGCCAT CTTCGTCAGC TGAGTGGTAC TGATAAGAAT ATCCCATTTC
241 CCCGAATATT GGGCGCTTTG GCAGATAAAT ATGGACCTGT CTTCACACTG AGAATAGGGA
301 TGTACCCCTA TTTGATTGTC AACAATTGGG AAGCAGCTAA GGATTGTCTC ACAACGCATG
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 361 ATAAGGACTT CGCTGCCCGA CCAACTTCTA TGGCTGGTGA AAGCATCGGG TACAAGTATG
 421 CGAGGTTTAC TTATGCTAAT TTTGGTCCTT ATTATAACCA AGTGCGCAAA CTAGCCCTAC
 481 AACATGTACT CTCGAGTACT AAACTCGAGA AAATGAAACA CATACGTGTT TCTGAATTGG
 541 AAACTAGCAT CAAAGAATTA TATTCTTTGA CGCTGGGCAA AAACAACATG CAAAAAGTGA
 601 ATATAAGTAA ATGGTTTGAA CAATTGACTT TAAACATAAT CGTGAAGACA ATTTGTGGCA
 661 AGAGATATAG CAACATAGAG GAGGATGAAG AGGCACAACG TTTCAGAAAG GCATTTAAGG
 721 GCATCATGTT TGTTGTAGGG CAAATTGTTT TATATGACGC AATTCCATTC CCATTGTTCA
 781 AATACTTTGA TTTCCAAGGT CATATACAAT TGATGAACAA AATTTATAAA GACTTAGATT
 841 CTATTCTTCA AGGATGGTTG GATGATCATA TGATGAACAA GGATGTAAAC AATAAGGATC
 901 AAGATGCCAT AGATGCCATG CTTAAGGTAA CACAACTTAA TGAATTCAAA GCCTATGGTT
 961 TTTCTCAGGC CACTGTGATC AAGTCGACAG TCTTGAGTTT GATCTTAGAT GGAAATGACA
1021 CAACCGCTGT TCATTTGATA TGGGTAATGT CCTTATTACT GAACAATCCA CATGTTATGA
1081 AACAAGGCCA AGAAGAGATA GACATGAAAG TGGGTAAAGA GAGGTGGATT GAAGATA
```

SEQ. ID. NO. 512

```
   1 MDYHISFHLP TLFGLFAFVF LSIILWRRTL NSRRLAPEIP GAWPIIGHLR QLSGTDKNIP
  61 FPRILGALAD KYGPVFTLRI GMYPYLIVNN WEAAKDCLTT HDKDFAARPT SMAGESIGYK
 121 YARFTYANFG PYYNQVRKLA LQHVLSSTKL EKMKHIRVSE LETSIKELYS LTLGKNNMQK
 181 VNISKWFEQL TLNIIVKTIC GKRYSNIEED EEAQRFRKAF KGIMFVVGQI VLYDAIPFPL
 241 FKYFDFQGHI QLMNKIYKDL DSILQGWLDD HMMNKDVNNK DQDAIDAMLK VTQLNEFKAY
 301 GFSQATVIKS TVLSLILDGN DTTAVHLIWV MSLLLNNPHV MKQGQEEIDM KVGKERWIED
```

SEQ. ID. NO. 513

D99-AB3

```
   1 GTAAATGAAG AAGATGTCCA AAACATCCCT TATTTTAAAG CAGTGATAAA GGAAATATTT
  61 AGATTGTATC CACCAGCTCC ACTTTTAGTT CCAAGAGAAT CAATGGAAAA AACCATATTA
 121 GAAGGTTATG AAATTCGGCC AAGAGCCATA GTTCATGTTA ACGCTTGGGC TATAGCAAGG
 181 GATCCTGAAA TATGGGAAAA TCCAGATGAA TTTATACCTG AGAGATTTTT GAATAGCAGT
 241 ATCGATTACA GGGT
```

SEQ. ID. NO. 514

```
   1 VNEEDVQNIP YFKAVIKEIF RLYPPAPLLV PRESMEKTIL EGYEIRPRAI VHVNAWAIAR
  61 DPEIWENPDE FIPERFLNSS IDYR
```

SEQ. ID. NO. 515

D99-AC2

```
   1 AAGAGTAATG GTGCATTAGG AGGTGAAGAT CTAATTGATG TCCTACTAAG ACTTAAGAAT
  61 GATACAAGTC TTCAATTTCC CATCACCAAC AACAATATCA AAGCTGTTAT TGTTGACATG
 121 TTTGCTGCCG GAACGGAAAC TTCATCAACA ACAACTGTAT GGGCTATGGC TGAAATGATG
 181 AAGAATCCAA GTGTATTCAC CAAAGCTCAA GCAGAAGTGC GAGAAGCCTT TAGGGACAAA
 241 GTATCTTTTG ATGAAAACGA TGTGGAGGAG CTGAAATACT TAAAGTTAGT CATTAAAGAA
 301 ACTTTGAGAC TTCATCCACC CTCTCCACTT TTGGTCCCAA GAGAATGCAG GGAAGACACA
 361 GATATAAACG GCTACACTAT TCCTGCGAAG ACCAAAGTTA TGGTTAATGT TTGGGCATTG
 421 GGAAGAGATC CAAAATATTG GGATGACGCC GAAAGCTTTA AGCCAGAGAG ATTTGAGCAA
 481 TGCTCTATGG ATTTTTTTGG TAATAATTTT GAGTTTCTT
```

SEQ. ID. NO. 516

```
   1 KSNGALGGED LIDVLLRLKN DTSLQFPITN NNIKAVIVDM FAAGTETSST TTVWAMAEMM
  61 KNPSVFTKAQ AEVREAFRDK VSFDENDVEE LKYLKLVIKE TLRLHPPSPL LVPRECREDT
 121 DINGYTIPAK TKVMVNVWAL GRDPKYWDDA ESFKPERFEQ CSMDFFGNNF EFLP
```

SEQ. ID. NO. 517

D99-AF11

```
   1 TTAAACCACC CTGAAACTCT GAAGAAAGCA CAAGCTGAAA TTGATGAACA TATAGGACAT
  61 GAACGTTTAG TGGACGAGTC GGACATCAAC AACCTACCTT ACCTACGTTG TATAATCAAC
 121 GAGACATTCC GAATGTACCC TGCAGGACCA CTACTAGTCC CACACGAGTC GTCAGAGGAA
 181 ACCACCGTAG GAGGCTACCG TGTACCCGGA GGAACCATGT TACTTGTGAA TTTGTGGGCT
```

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241 ATTCACAATG ATCCAAAGCT ATGGGATGAA CCAAGAAAGT TTAAGCCAGA AAGATTTGAA
301 GGACTAGAAG GTGTTAGAGA TGGTTACAAA ATGATGCCCT
```

SEQ. ID. NO. 518
```
  1 LNHPETLKKA QAEIDEHIGH ERLVDESDIN NLPYLRCIIN ETFRMYPAGP LLVPHESSEE
 61 TTVGGYRVPG GTMLLVNLWA IHNDPKLWDE PRKFKPERFE GLEGVRDGYK MMP
```

SEQ. ID. NO. 519
D99-AH4
```
  1 GTCAGGTTTC ATCCTATAGC TCCAGTATTA GCACCTAGAG AATCAAGGGA AGAGTGTGAG
 61 ATTAATGGCT ATGTTATACC AAAAGGCACA ATGGCCCTTG TGAATTTTTG GGCAATTTCT
121 AGGGATCCAA ATTATTGGTC AAATCCTGAA ACATTTGATC CAGAGAGATT TAATGAAAGT
181 CACCTTGATT TTACTGGAGC TCATTTCGAG TTTACGCC
```

SEQ. ID. NO. 520
```
  1 VRFHPIAPVL APRESREECE INGYVIPKGT MALVNFWAIS RDPNYWSNPE TFDPERFNES
 61 HLDFTGAHFE FT
```

SEQ. ID. NO. 521
D99-AH7
```
  1 GTTATTTGGG CATTAGCAGA AATGATAAAG AATCCAAGTG TAATGGCGAA AGCACAAGCA
 61 GAAGTGAGAG AAGCTTTTAA AGGAAAGAAA ACATGTGATG AGGATACTGA TCTTGAAAAG
121 CTTAGTTACC TAAATTTAGT GATCAAAGAG ACACTCCGAT TACACCCTCC AACTCCTCTA
181 CTTGTCCCGC GAGAATGCAG GGAGGAAACA GAGATTGAAG GATTCACTAT ACCGTTGAAA
241 AGCAAAGTCT TGGTTAACGT ATGGGCAATT GGAAGAGATC CCGAGAATTG GGGAAATCCT
301 GAATGTTTTA TACCAGAGAG ATTCGAAAAT AGTTCTATTG AGTTTACTGG AAATCATTTT
361 CAACTTCTT
```

SEQ. ID. NO. 522
```
  1 VIWALAEMIK NPSVMAKAQA EVREAFKGKK TCDEDTDLEK LSYLNLVIKE TLRLHPPTPL
 61 LVPRECREET EIEGFTIPLK SKVLVNVWAI GRDPENWGNP ECFIPERFEN SSIEFTGNHF
121 QLL
```

SEQ. ID. NO. 523
D99-DB4
```
  1 GAATATCTTG GTGAAGGTTA CTCTCGTGAT ACTGTCATTA AAGCAACGGT GTTTAGTTTG
 61 GTCTTGGATG CAGCAGACAC AGTTGCTCTT CACATAAATT GGGGAATGGC ATTATTGATA
121 AACAATCAAA AGGCCTTGAC GAAAGCACAA GAAGAGATAG ACACAAAAGT TGGTAAGGAC
181 AGATGGGTAG AAGAGAGTGA TATTAAGGAT TTGGTATACC TCCAAGCTAT TGTTAAAGAA
241 GTGTTACGAT TATATCCACC AGGACCTTTG TTAGTACCAC ACGAAAATGT AGAAGATTGT
301 GTTGTTAGTG GATATCACAT TCCTAAAGGG ACAAGATTAT TCGCAAACGT CATGAAACTG
361 CAACGTGATC CTAAACTCTG GTCTGATCCT GATACTTTCG ATCCAGAGAG ATTCATTGCT
421 ACTGATATTG ACTTTCGTGG TCAGTACTAT AAGTATATCC CC
```

SEQ. ID. NO. 524
```
 61 RWVEESDIKD LVYLQAIVKE VLRLYPPGPL LVPHENVEDC VVSGYHIPKG TRLFANVMKL
121 QRDPKLWSDP DTFDPERFIA TDIDFRGQYY KYI
```

SEQ. ID. NO. 525
D99-DG4

```
  1 CTTATGGTGG ATTTATTCAT TGCTGGAAGT GACACATCTG CTATAACAAC AGAATGGGCA
 61 ATGGCAGAAC TTCTTCGAAA ACCTCAAGTA CTTAACAAAG TAAGAGAAGA AATACTTCAA
121 CAAATAGGCA CAGAAAGACC AGTGAAAGAA TCAGACATTG AGAAACTTCC ATACCTTCAA
181 GCAGTTGTAA AAGAAGCAAT GAGACTTCAT CCGGCAGTTT CATTACTCTT GCCACACAAA
241 GCCCAAAATG ATATACAAGT GTTGGGCTAC ACTGTGCCTA AGAACACTCA AGTTCTCGTG
301 AATGCTTGGG CAATTGGAAG AGATCCAAAA TCCTGGGATA AGCCACTGGA GTTTATGCCT
361 GAAAGATTCA TAAAGTCTAG TGTGGATTAC AAAGGTAGGG ACTTTGAGTT TATACCC
```

SEQ. ID. NO. 526

```
  1 LMVDLFIAGS DTSAITTEWA MAELLRKPQV LNKVREEILQ QIGTERPVKE SDIEKLPYLQ
 61 AVVKEAMRLH PAVSLLLPHK AQNDIQVLGY TVPKNTQVLV NAWAIGRDPK SWDKPLEFMP
121 ERFIKSSVDY KGRDFEFIP
```

SEQ. ID. NO. 527
D40-2

```
  1 CACATGAAAA TGTAAAGGAT TGTGTTGTTA GTGGATATCA CATTCCTAAA GGGACTAGAT
 61 TATTCGCAAA CGTCATGAAA CTGCAGCGCG ATCCTAAACT CTTGTCAAAT CCTGATAAGT
121 TCGATCCAGA GAGATTCATC GCTGGTGATA TTGACTTCCG TGGTCACCAC TATGAGTTTA
181 TCCCATTTGG TTCTGGAAGA CGATCTTGTC CGGGGATGAC TTATGCATTG CAAGTGGAAC
241 ACCTAACAAT GGCACATTTA ATCCAGGGTT TCAATTACAA AACTCCAAAT GACGAGGCCT
301 TGGATATGAA GGAAGGTGCA GGCATAACAA TACGTAAGGT AAATCCAGTG GAATTGATAA
361 TAACGCCTCG CTTGGTACCT GAGCTTTACT AAAACCTAAG ATCTTTCATC TTGGTTGATC
421 ATTGGTTAAT ACTCCTAGAT GGGTATTCAT TTACCTTTTT TCAATTAATT GCATGTCCAG
481 CTTTTTTAAT TTGGTATATT T
```

SEQ. ID. NO. 528

```
  1 HENVKDCVVS GYHIPKGTRL FANVMKLQRD PKLLSNPDKF DPERFIAGDI DFRGHHYEFI
 61 PFGSGRRSCP GMTYALQVEH LTMAHLIQGF NYKTPNDEAL DMKEGAGITI RKVNPVELII
121 TPRLVPELY
```

SEQ. ID. NO. 529
D301-EE11

```
  1 TATAAGTATA TCCCGTTTGG TTCTGGAAGA CGATCTTGTC CAGGGATGAC TTATGCATTG
 61 CAAGTGGAAC ACTTAACAAT GGCACATTTG ATCCAAGGTT TCAATTACAG AACTCCAAAT
121 GACGAGCCCT TGGGTATGAA GGAAGGTGCA GGCATAACTA TACGTAAGGT AAATCCTGTG
181 GAACTGATAA TAGCGCCTCG CCTGGCACCT GAGCTTTATT AAAACCTAAG ATCTTTCATC
241 TTGGTTGATC ATTGTATAAT ACTCCTAAAT GGATATTCAT TTACCTTTTA TCAATTAATT
301 GTCA
```

SEQ. ID. NO. 530

```
  1 YKYIPFGSGR RSCPGMTYAL QVEHLTMAHL IQGFNYRTPN DEPLGMKEGA GITIRKVNPV
 61 ELIIAPRLAP ELY
```

SEQ. ID. NO. 531
D302-AE10

```
  1 TTTTAAAGAT ATAGATTCTG TTTTTCAGAA TTGGTTAGAG GAACGTATTA ATAAAAGAGA
 61 AAAAATGGAG GTTAATGCAG AAGGGAATGA ACAAGATTTC ATTGATGTGG TGCTTTCAAA
121 AATGAGTAAT GAATATCTTG GTGAAGGTTA CTCTCGTGAT ACTGTTATTA AAGCAACGGT
181 GTTTAGTTTG GTCTTGGATG CAGCAGACAC AGTTGCTCTT CACATAAATT GGGGAATGGC
241 ATTATTGATA AACAATCAAA ATGCCTTGAT GAAAGCACAA GAAGAGATAG ACACAAAGT
301 TGGTAAGGAT AGATGGGTAG AAGAGAGTGA TATTAAGGAT TTAGTATACC TCCAAGCTAT
361 TGTTAAAAAG GTGTTACGAT TATATCCACC AGGACCTTTG TTA
```

SEQ. ID. NO. 532

```
  1 FKDIDSVFQN WLEERINKRE KMEVNAEGNE QDFIDVVLSK MSNEYLGEGY SRDTVIKATV
 61 FSLVLDAADT VALHINWGMA LLINNQNALM KAQEEIDTKV GKDRWVEESD IKDLVYLQAI
121 VKKVLRLYPP GPLL
```

SEQ. ID. NO. 533

D303-AC6

```
  1 TATAAGTATA TCCCGTTTGG TTCTGGAAGA CGATCTTGTC CAGGGATGAC TTATGCATTG
 61 CAAGTGGAAC ACTTAACAAT GGCACATTTG ATCCAAGGTT TCGATTACAG AACTCCAAAT
121 GACGAGCCCT TGGATATGAA GGAAGGTGCA GGCATAACTA TACGTAAGGT AAATCCTGTG
181 GAACTGATAA TAGCGCCTCG CCTGGCACCT GAGCTTTATT AAAACCTAAG ATCTTTCATC
241 TTGGTTGATC ATTGTATAAT ACTCCTAAAT GGATATTCAT TTACCTTTTA TCAATTAATT
301 GTCA
```

SEQ. ID. NO. 534

```
  1 YKYIPFGSGR RSCPGMTYAL QVEHLTMAHL IQGFDYRTPN DEPLDMKEGA GITIRKVNPV
 61 ELIIAPRLAP ELY
```

SEQ. ID. NO. 535

D303-AC11

```
  1 GAGATTCATT GCTACTGATA TTGACTTTCG TGGTCAGTAC TATAAGTATA TCCCGTTTGG
 61 TTCTGGAAGG CGATCTTGTC CAGGGATGAC TTATGCATTG CAAGTGGAAC ACTTAACAAT
121 GGCACATTTG ATCCAAGGTT TCAATTACAG AACTCCAAAT GACGAGCCCT TGGATATGAA
181 GGAAGGTGCA GGCATAACTA TACGTAATGT AAATCCTGTG GAACTGATAA TAGCGCCTCG
241 CCTGGCACCT GAGCTTTATT AAAACCTAAG ATCTTTCATC TTGGTTGATC ATTGTATAAT
301 ACTCCTAAAT GGATATTCAT TTACCTTTTA TCAATTAATT GTCA
```

SEQ. ID. NO. 536

```
  1 RFIATDIDFR GQYYKYIPFG SGRRSCPGMT YALQVEHLTM AHLIQGFNYR TPNDEPLDMK
 61 EGAGITIRNV NPVELIIAPR LAPELY
```